HEALTH SERVICES FOR SEXUALLY ASSAULTED. COMPLAINANTS' AND JUDICIAL USE OF A SELF-REFERRAL CENTRE; CASE-FLOW FROM ASSAULT TO LEGAL OUTCOME

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ACKNOWLEDGEMENTS

This project has grown slowly, like the trees on our Northern coastline.
Years of clinical experience as a general practitioner/medical forensic examiner, and many discussions on the premises for our Sexual Assault Centre (SAC), had evoked curiosity on many topics.
Themes had to be sorted out and research methodology had to be learned: the drafting of a project, writing applications for funding and ethical approval, how to make registration forms and deal with dilemmas in the registration, how to deal with statistics and statistical data programs, how to write a manuscript. Plunging into a detailed registration permitted the exploration of a continent familiar from practical work, whereas cartography and structure developed by and by.
After some initial sidesteps on topics of forensic interest; e.g. injury patterns and toxicological results; I settled on focusing the use of SAC services, case-flow from assault to SAC/police and attrition of cases and SAC information.

In retrospect; starting with a multi-centre study was rather a risk sport for a beginner but evoked questions regarding interpretation of attending patterns and barriers against attending. Further exploration of attending patterns led to reflections on the paradoxes related to forensic medical examination (FME) in a SAC setting. This examination is meticulous and very expensive for the centres if these are to provide work of quality i.e. in competence and sufficient resources/practical facilities, and is performed on behalf of the police and jurisprudence. Yet, our juridical authorities do not engage in defining any standards of quality, neither in providing education nor framework for clinical forensic medical work in general. Considering our small and scattered population, the few forensic institutions and the many small SACs, we urgently need a common organisation for forensic services.
Today, the costs of forensic casework at SACs are pushed on to the local municipalities, with a minor contribution from the local police. A set of guidelines including forensic instructions have been developed by *health* authorities without any system for up-dating according to forensic development. As for the rehabilitation of victims, which definitely should be of concern for health authorities, no minimum standards or guidelines are defined – although some recommendations have been presented by j*uridical* authorities. And the politicians seem to believe that all problems are solved by saying ”let there be SACs”.

Through this project I wanted to show the benefits of self-referral centres compared to traditional police-requested examinations at forensic institutes, that the police gain a lot thereby without carrying the extra costs. There is also a considerable attrition with consequences for legal outcome since the police do not utilise all available medical evidence and victims back off. Last, but not least, victims’ medical needs obviously deserve more attention, in practical medicine as well as in research.
Hopefully, this project may contribute to further improvements.

However, without encouragement and support, this project might have floundered:

Berit Schei encouraged me to begin and introduced me to Norvold, a Nordic research network funded by the Nordic Council of Ministers. This network initiated the comparative study and introduced me to several clever women that I am proud to know, amongst these my cowriters in the comparative study; Guðrún Agnarsdóttir, Anne-Marie Worm and Ursula Vala.

Ole Christian Hjemdal gripped me by my neck when I thought I’d better quit the project before starting the main work, and offered a guest link to the NKVTS (National Centre for Violence and Traumatic Stress Studies), a multidisciplinary research centre.

Meeting Svein Friis, my one tutor, was like attending a master class whilst still playing the piano with one finger. A quiet question from him could turn my thoughts in new directions, new perspectives unfolding. He just asked and patiently left me to find the answers, then later advising on the presentations.
Kari Ormstad, my other tutor, steadily kept me going by her generous support and sense for language, her indescribable humour and an inspiring stamina.
Characteristic for both tutors, they are hard working and honest, dedicated and blessedly devoid of pointed elbows.

At the Oslo Police District, Veslemøy Grytdahl assisted in combing the police registers and archives.
At the Forensic Institute, Oslo University Hospital, Eva Stålstrøm collected the relevant results from trace evidence analysis.

Norwegian Women's Public Health Association and EXTRA funds from the Norwegian Foundation for Health and Rehabilitation supplied funding, and were understanding when I had to postpone the main start of the project. Actually, being recommended by the Norwegian Women's Public Health Association is an honour, as this organisation has addressed many health and social issues in the Norwegian society; women indeed are capable.

Oslo University Hospital, Ulleval, friendly supplied a variety of practical support. Division of psychiatry provided affiliation for the project. Division for Research and Development administered the funding. Oddmar Moen gave lessons in SPSS and syntaxes. Leiv Sandvik supervised the statistics and Heidi Thorstensen gave advice on data security. Librarian Irene Refsland and her colleagues taught me to master reference tools and manuscript centrals.

Oslo Emergency Medical Agency, Legevakten, supplied a flexible attachment with the SAC during the research period, supported by the Norwegian Directorate of Health as a basic national competence building programme was requested.
Prior to the research period, the medical work at SAC had been a quite lonely one, the introduction of colleague Henriette M Waitz made a positive difference. Since 2007, the medical staff has expanded further, and at present, SAC is in a new phase of development. The social service counsellors have always been there, supportive and interactive since SAC's beginning.

Patients have taught me a lot. I have been struck by how they may suffer, their courage to fight for restitution, and their personal dignity although they may not perceive dignity themselves. Sexual assaults do represent serious health risks, casting long shadows.
The court trials have taught me to appreciate the meticulousness of forensic work and to realise the challenge of being a forensic medical examiner in a care-giving organisation.

Finally, I would like to thank my family and friends who have accepted my years of intensive activity with research project, practical medical work and national implementations. My husband has faithfully handled 90% of the cooking and the children's' activities. Our children have grown out of childhood during these years – I hope I have not failed them by spending all this time on work. My old MD father, who used to worry about the enterprise, may soon settle his worries. My resentment to resign, I believe to be a maternal heritage added a dash of paternal stubbornness.
My friends have accepted my absence – I shall re-socialise before long.

I am grateful to you all - most of all to my family and tutors.

ABBREVIATIONS

Dk: Denmark

Fi: Finland

FME: Forensic medical examination

FMI: Forensic medical institute

Is: Iceland

No: Norway

SA: sexual assault

SAC: Self-referral Sexual Assault Centre

PUBLICATIONS INCLUDED IN THE THESIS

The thesis is based on these four papers which are referred to in the text by their roman numerals:

I. Different Nordic facilities for victims of sexual assault: a comparative study
Nesvold H, Worm AM, Vala U, Agnarsdottir G.
Acta Obstet Gynecol Scand 2005;84:177 – 83

II. Sexual assault centres: Attendance rates, and differences between early and late presenting cases
Nesvold H, Friis S, Ormstad K.
Acta Obstet Gynecol Scand 2008;87:707 – 15

III. Sexual assault centres and police-reporting - an important arena for medical/legal interaction
Nesvold H, Ormstad K, Friis S.
Ref Type: Submitted to Journal of Forensic Sciences

IV. To be used or not to be, that is the question.
Legal use of forensic and clinical information collected in a self-referral Sexual assault centre
Nesvold H, Ormstad K, Friis S.
Ref Type: Submitted to Journal of Forensic Sciences

INTRODUCTION

During the last few decades sexual assaults (SA) have been increasingly focused in the media and in professional literature. The main areas of concern have been prevalence, consequences, cultural attitudes, insufficient supportive services, low reporting and conviction rates (1-10). It is generally acknowledged that sexual assaults represent major social, health and legal problems, yet often embedded in myths and neglected. In a global perspective, sexual assaults contribute to the general oppression of women and children, but also affect males, occur commonly in torture, and wartime rapes are documented since ancient times (11); the latter now defined as a war crime and of much concern for international organisations (12;13). Although oppression is less prominent in the Western world, treatment of victims is still suboptimal. Legislation and services should be further improved, and developed states governed by law have a particular responsibility to promote improvements and unmask the seriousness of these crimes.

International UN conventions like UNCP (Covenant on Civil and Political Rights), CEDAW (Convention to Eliminate Discrimination against Women) and the CJSV(Convention on Justice and Support for Victims of Crime and Abuse of Power) impose national obligations to address victims' legal situation/legal rights and the need for preventive measures (14-16). The European Convention of Human Rights ensuring the rights of the accused is also applicable to victims' rights (7;17-19). WHO has published Guidelines for medico-legal care for victims of sexual violence (1;20;21). Several countries have revised their legislation regarding sexual assault (17;22) and reporting rates increase in Northern Europe (17;22-26) – but not conviction rates (7;17;22), and access to assistance and treatment is highly variable.

Supportive services for victims may be non-existing or self-supportive at women's shelters. Access to professional help, counselling and medical treatment may sometimes be linked to examinations at forensic medical institutes (FMI) but is more often scattered for victims themselves to search for. However, an increasing number of self-referral centres are established, as recommended (20;27;28). Victims can approach these centres directly for multidisciplinary services like medical care, psychosocial support and standardised forensic medical examination (FME); but the centres' organisational fundament vary.

This diversity of services reflects that medical services originally were requested for legal purposes. During recent times, health and welfare systems gradually have taken on responsibility for rehabilitation. Modern self-referral sexual assault centres (SAC) combine two intentions by providing medicolegal documentation as well as socio-medical assistance.

How purposeful are these services?

There is a need for studies that compare and evaluate results from different services and centres, e.g. self-referral SACs and police-dependent FMIs, their attendance rates and client/case characteristics. So far, such inter-centre comparisons are rare (29).

There is also sparse knowledge of SACs' success in reaching the total target group as most SAC-based studies report only on cases which have been attended to.

Attendance rate (number of visitors vs. population served) and incidence of sexual assault are informative of the thresholds for help-seeking. Attendance rates enable inter-centre comparisons and intra-centre monitoring; differences may indicate threshold variations. Few studies focus the services utilised by those consulting and even less attention has been given those arriving too late for FME. Attending patterns and use of services at self-referral centres reflect victims' preferences regarding services, i.e. information useful for adapting the services to victims' needs.

We therefore need studies of early and late attendance and estimates of the fraction of actually assaulted persons that consult the SACs.

Medical contribution to the legal process is also insufficiently explored. Both SACs and FMIs have presented examination results vs. legal outcome (8;30-40), but when other key evidence like e.g. witness testimonies, seldom are included (38;39), interpretation is difficult. SAC-based studies may compare police-reported cases to non-reported cases (41;42); reliable identification of actually police-registered cases evidently being mandatory. Few address the judiciary benefit of performing FME prior to police reporting (43). Case logistics from alleged assault to SAC and further to police has scarcely been touched, neither has utilisation of medical documentation in police investigation. Attrition in rape cases within the legal system has been a topic in criminology, less so the attrition from assault to SAC and from SAC to police. Attrition and legal proceedings in rape cases are also widely discussed in public, and more knowledge about legal use of SAC services ought to be included in the

discussion. Such information is also relevant for SACs defending the costs of forensic work irrespective of police involvement, as forensic work is expensive.

The present study addresses the challenges mentioned above.
The main aims of the study are:

1. To compare attending rates and case profiles regarding police-reported sexual assaults seen at different medical services: FMIs with police-regulated admission and self-referral SACs
2. To estimate the fraction of actually occurring assaults presented to SAC, and explore differences in case panorama and use of services among early and late attendees
3. To identify SAC cases registered with the police, case logistics from assault to SAC and police and thereby evaluate:
    a) Reporting practices in cases presented in time for FME and those presented later
    b) Costs and benefits of self-referral FME performed irrespective of police involvement, i.e. fraction of performed FMEs which is not further utilised due to non-reporting, and police gain in cases of delayed report (FMEs performed ≥ 2 days before reporting)
    c) Whether police involvement can be sufficiently predicted for selective performance of FME
    d) The attrition; percentage of SAC cases reported, and fractions lost to the legal system as not reported, complaint withdrawn or information not collected; as well as reported rapes where the victims did not attend SAC
4. To identify to what extent the police use information collected by the SAC, and thereby evaluate:
    a) Predictors for police use of SAC-based information and material; in cases where the information is available for legal use and explored separately for cases with available FME data and cases without
    b) Potential contribution of SAC-based casework in the legal process

The results may contribute to improve the services offered, to facilitate SAC/police/victim interaction, and to improve legal use of SAC casework.

MATERIAL AND METHODS

The project emanates from the Nordic countries, the main SAC in the project being located in Oslo, Norway. The Nordic countries have had differently organised services for sexually assaulted, and they are culturally sufficiently close for comparisons. Regarding Oslo; the city is served by this single SAC and constitutes a single police precinct. The population has been studied for prevalence and incidence of sexual assault. These factors allow a comparison of actually occurring assaults to those seen at the SAC. All SAC cases registered with the Norwegian police can be identified in reliable registers. The given permission to review the police files allowed investigation of case logistics, attrition and police's use of SAC work.

The present series are descriptive, based on retrospectively collected data from the Oslo Sexual Assault Centre and corresponding police files in police-reported cases. The first section where SACs are compared to forensic medical institutes (FMIs) also includes data from SAC Reykjavik (Iceland), FMI Helsinki (Finland) and FMI Copenhagen (Denmark). Data from Oslo SAC are included in all sections of the project. This SAC was established in 1986 and serves a population of about 500,000 inhabitants, catering to victims ≥ 14 yrs old of both genders. The centre is located in the main outpatient emergency ward and defined as a health service. Victims are protected by health care confidentiality unless giving an informed consent to release information, e.g. to the police.
The centre was originally intended for acute cases, but the strict time limits were abandoned as expansion within existing capacity disclosed a variety of needs also among later attendees. All victims are offered medical care, psychosocial support and a 3 – 4 months' follow-up at SAC, as well as referrals to other services when appropriate. Patients arriving in time are offered a standardised forensic medical examination, irrespective of police involvement. In unreported cases, trace evidence samples are stored for minimum three months. Victims may freely choose which services to use, all free of charge. SAC's costs are carried by the health institution housing SAC supported by The National Health Insurance (medical help/treatment) and the police (a modest fee when medical information is requested).

In the mid-nineties, self-referral services for sexually assaulted (SAC) had been organised in two Nordic capitals (Norway = *No*, Iceland = *Is*). In two other capitals (Denmark = *Dk*, Finland = *Fi*) victims could have a police-requested FME at a forensic institute, and be further

referred for treatment, but systematic socio-medical support was not established. Sweden had no single centre serving the capital area. Thus, totally four centres, each serving a defined population, were available for comparing the SAC organisation to the older model where only police could request FME from a forensic service.
The two SACs offered approximately the same services, the *Is* hospital-based and engaging gynaecologists on call, the *No* in a primary care emergency ward where the staff is basically trained in FME.

In the multicentre study, information from each centre was gathered by the author affiliated with the respective centre, according to a joint protocol.
Three centres provided data from 1996, *Dk* data from 1994 were extracted from a previous study (44).
The FMIs included all rape/sexual assault victims aged ≥12 yrs in one year. The SACs, operating with a lower age limit of 12/14 yrs (*Is/No*), included all cases except a couple of pre-school outliers referred to paediatric wards.
As population size is different in the four capitals (roughly *Is* 150,000, *No 5*00,000, *Fi* 800,000 and *Dk* 1,000,000), results were presented in crude numbers, percentage within each centre, as well as "indexed" to a 100,000 female population at risk ((crude female number/female populations aged 12 – 54 yrs) x 100,000). The latter allows direct comparisons, being informative upon relation between victims/catchment populations most at risk. Focusing the population most at risk reduces bias due to inequalities in the prepubertal and the elderly population; and from adolescence on, females dominate as victims of sexual assault and visitors at SACs, while victims ≥ 55/60 yrs rarely attend (33;37;42;45-53).

In Papers II – IV the Oslo series were expanded by including the cases from 1999, as well as review of corresponding police files.
The study has been approved by the National Data Inspectorate, the Regional Research Ethics Committee and the Committee for Secrecy and Research ("Rådet for taushetsplikt og forskning") for the judiciary system.
Annual reports from Oslo SAC have been rather stable since 2000 with regard to case profiles, the fractions forensically examined, and known reporting rates. The annual number of cases was approximately 150 during the centre's first eleven years, increased in 1998/99 and stabilised at 205 ±15 thereafter. Although a second rise occurred in the second half of

2006, the years embraced by this study are considered representative and relevant to demonstrate points of interest.

Data regarding medical, forensic and counselling casework at Oslo SAC were collected from standardised SAC files. Variables concerning the assaults are based on victims' descriptions (for details see Papers II– IV):

- Victim: gender, age, ethnicity, and additional vulnerability (i.e. physical/mental handicap, serious physical disease, diagnosed psychosis before/at/after consulting SAC, addiction problems, previous sexual abuse/assault)
- Interval between assault and presentation at SAC
- Type of sexual assault according to the most serious act: penetration of body orifice with penis/object; non-penetrative assault; amnesia/strong suspicion of assault; unclear cases/vague description
- Coercion: verbal, holding, violence in excess of holding, exploitation during alcohol/drug intoxication, and unclear/vague description. Assaults consisting of several acts of coercion are coded according to the one most likely to result in bodily harm. Cases involving weapons are specified in text
- Number of perpetrators and victim's relation to perpetrator: unknown, known other than partner, present/previous intimate partner
- Site of assault: victims' area, perpetrator's area, neutral. Geographically; venue within or outside Oslo precinct
- Forensic examinations: recorded extragenital and anogenital injuries. Trace evidence samples secured at FME
- Medical examinations performed (evidence of pregnancy, sexually transmitted disease) and attendance to medical follow-up (at least once)
- Counselling: whether victim attended one or more counselling sessions
- SAC documentation conveyed to the police: FME, medical/counselling/follow-up information, expert statements

Population data for calculating attendance rates for the female population most at risk were obtained from Statistics Norway (see www.ssb.no).
A population survey in SAC's catchment area provided information on incidence of sexual assault among female Oslo inhabitants aged 24 – 55 yrs (54). This 2002 population incidence

was considered comparable to the 1999 incidence, thus allowing an estimate of the fraction of actually assaulted having attended SAC in 1999.

Some SAC files contained scant details of the assault due to victim's inability/unwillingness to tell, incomplete examinations or inveterate cases. Lack of information resulting from the victim's inability to explain is specified since such cases occur regularly.
The lower age limit at this SAC is normally 14 yrs but during the study period, two 13 year-olds were included. One case of only counselling was included in the comparative study, but not in the following sections as the main file was missing.
In order to identify cases registered with the police, victims' identities were cross-checked against the national population register. Several victims were found to have died and the year of death was noted; causes of death were not specified.

Police-registered cases were traced through national police registers (STRASAK, SANSAK). Local Oslo files were searched for preliminary statements e.g. from police squads bringing victims to SAC. Thus, most probably all cases registered with Norwegian police were identified. Three more cases reported abroad were included for the evaluation of predictors of police involvement, but not when studying the police's utilisation of SAC work.

For the original paper comparing SACs and FMIs, information on police registration in Oslo was collected from SAC's internal records on police notifications and SAC documentation conveyed to the police. The subsequent access to police registers disclosed the true number of reporting women in Oslo to be 72, not 61, as the police had not contacted SAC in all reported cases. The *Is* SAC has not proceeded with similar research and thus not checked cases against police registers, but does not suspect distinct discrepancies as SAC cooperated closely with police and legal counsel. At the two FMIs, all cases were registered with the police. For this presentation the main results in the comparative section have been recalculated according to adjusted data from the Oslo SAC (Table 1).

Retrievable police files were reviewed. These comprised interrogations, technical reports, correspondence, and verdicts in cases brought to court. There were no written assessments except in the verdicts.
The police's coding of a case was read from the STRASAK register at the time the search was performed (2005). Codes may be modified during investigation and thus diverge somewhat

from the code at first presentation of complaint, but not so that rape codes are eradicated from cases where investigation indicates no crime. The present study does not explore code modifications.
Six police files were inaccessible; core information from these cases was collected from STRASAK.

The following data were gathered from the review:

- Date of reporting, tertial of the year (see def)
- Intervals between assault, arrival at SAC and registration with the police
- Police classification of reports
- Victims' withdrawal of consent to investigation
- Police identification of perpetrator(s)
- Police interrogation of perpetrator – whether perpetrator admitted main sexual acts in accordance with victim's explanation. Other inconsistencies between victim/offender statements were not evaluated
- Cases where police requested analysis of trace evidence sampled at FME. Analysis results were coded according to the evidentiary strongest outcome (extrinsic DNA > sperm > acid phosphatase). Trace evidence collected by police e.g. at site of assault was not included. Results were gathered directly from the laboratory
- Medical/supportive information and expert evaluations from other sources than SAC
- Legal outcome

Five female victims were seen after two separate assaults each, with different perpetrators. All these assaults are included as the study focuses on casework. For the same reason three police-reported cases linked by the same perpetrator were also included. More cases among those not reported, or with unidentified perpetrator, may have been similarly linked. Repeated FMEs involving same victim and same perpetrator e.g. in a violent relationship, were not encountered during these years.

Cases were separated according to victims' gender for the comparative part of the study; but not for the following sections based on the files from Oslo SAC as numbers of males were few and gender differences were rare (Paper II).

Case patterns 1996 and 1999 in Oslo were quite similar and data were merged in Paper II − IV.

Definitions

Victim/complainant: an individual alleging an incident of sexual violence against her/him

Perpetrator: a person who, according to victim, has committed assault against victim

Attending rate (females): number of cases per 100,000 population at risk. If not otherwise specified; limited to number of cases involving female victims aged 14 – 55 yrs related to corresponding selection of population at risk. The age-limits were set to cover the groups most at risk – 14 yrs being the lower age limit at this SAC, and sexual assaults are assumed less common after age 55 yrs.

Classic rape trilogy, *the stereotype of "real rape"*: penetrative assault by violence, unknown perpetrator

Forensic medical examination (FME): examination of the body surface and orifices for injury and trace evidence collection. Solely toxicological testing is not included as FME (few)

Early cohort: arrival in time for FME. Time limits for FME with sampling changed between 1996 and 1999, from three to seven days post-assault (cervicovaginal swabbing). The cut-off for "in time" and early cohort was linked to the possibility of FME for the studies focusing FME

Late cohort: those arriving too late for FME. All but 6 hesitated > 7 days

Reported cases: cases where the assault was registered with the police

Forensic benefit of self-referral: cases registered with police ≥ 2 days after FME at SAC. As loss of trace evidence mainly occurs during the first 24 – 36 hours post-assault; the possibility of finding evidence is markedly reduced at any FME performed later. Previous practice of performing FME only at police request often delayed examination towards or past this quality limit; or FME would not be requested at all. Victims consulting and reporting the same date ±1 day, would have stood a reasonable chance of early FME within a police-dependent organisation; but definitely not those postponing police involvement for two or more days. Thus the forensic examinations performed in the latter cases represent the forensic benefit of self-referral SAC organisation.

Early withdrawal: victims' consent to further police involvement withheld in the early phase of investigation. Most of these victims did not return to give a full statement after the first notification; and permission to collect medical evidence was not obtained

Late withdrawal: victims' consent to cooperate withdrawn during ongoing investigation; medical information had/ could have been collected

Rape, classified by police as rape: the definition according to Norwegian penal code is quite wide and includes insertion of penis/object/finger in vagina/anus or penis in mouth, as well as masturbation. Victims may be coerced by force, threats or during unconsciousness/drug-induced incapacitation

Other police codes: includes attempt at rape, sexual act with child <16 yrs, exploitation of dependency/profession, bodily harm/ threats, self-inflicted injuries as well as preliminary registrations by police not completed with a full victim statement

Tertial of complaint: which 4-months period of the year complaint was filed (1: Jan – April; 2: May – Aug; 3: Sept – Dec). The first two tertials were later merged as these results were similar.

Available cohort: cases where police had access to SAC case-work; victim permitting collection of SAC work, investigation not closed before victim's arrival at SAC

Forensic cohort: cases within available cohort where FME had been performed

Trace evidence subgroup: subgroup within forensic cohort where FME included collection of trace evidence

The non-forensic cohort: cases within available cohort where FME was not performed

Statistics

For the comparative part of the study, information from the four centres was collected in Excel. Significance of frequency differences were evaluated with chi-squared tests; z test in SPSS version for the original paper and 2008 Epi info when calculating the frequency differences related to population for this presentation. In the latter calculation the original figures were used, whereas Table 1 presents the results per 100,000 females.

In the sections concerning Oslo SAC, the statistical analyses were performed by use of SPSS version 11. Statistical significance of frequency differences were evaluated with chi-square test and Fisher's exact test when any cell had an expected number ≤ 5. Unadjusted and adjusted odds ratios were calculated by means of logistic regression analyses.

Dependent variables in the logistic regression analyses were "presentation later than a week" performed within total material, "registration with the police" within early and late presenting cohorts, "FME documentation utilised by the police" within forensic cohort and "trace evidence sample analyses performed" within the trace evidence subgroup.

The polytomous variables of assault characteristics were coded using the classic rape features as reference.

Age was linearly related to late arrival (increasing), showed a U-shaped relation to registration with the police, an S-shaped relation to analysing trace evidence (trend decreasing), and was unrelated to collection of FME documentation. Age had thus to be treated differently in the various analyses. For details, see Papers II, III and IV.

Univariate logistic regressions were first performed. Due to different numbers of cases in the various analyses, different approaches were chosen for the multiple analyses.

A backward regression was chosen for late presentation in the total material, taking into account that a valid result requires that the numbers of independent variables included at each step do not exceed one tenth of the smallest part of the dichotomously divided material. The most relevant univariate significant variables were entered into the first multivariate model, followed by stepwise exclusion of non-significant variables.

For analysing registration with the police in early and late cohorts, significant univariate variables were entered by a forward stepwise procedure.

When analysing the police's use of FME documentation, only two variables were entered at a time, due to the low numbers of not collected records. The regression regarding forensic analyses were for similar reasons restricted to 6 variables. Restriction rested on clinical judgment, and we wanted to explore less obvious associations.

The final models were tested for goodness of fit. The statistical analyses were performed by use of SPSS version 11.

RESULTS

Paper I – summary

Different Nordic facilities for victims of sexual assault: a comparative study

Nesvold H, Worm AM, Vala U, Agnarsdottir G.

Acta Obstet Gynecol Scand 2005;84:177 – 83

The first section encompassed 380 cases from four Nordic capitals; two FMIs (*Dk, Fi*) and two SACs (*Is, No*).

Core information concerning the 358 female cases is presented in Table 1 and Fig 1 in the erratum, where the Norwegian figures have been revised according to true incidence of police-registration. At both SACs, 53% of the cases were registered with the police; these cases are focused for the comparison.

Related to population at risk, SACs received 2 – 3 times more reporting victims than the FMIs, the differences mainly affecting those 16 – 24 yrs (Fig. 1), much less those older. There were clear differences between the SACs and the FMIs on a group level, but also some inter-centre differences within each group. The latter related mainly to attendance rates relative to population as the *Is* SAC and *Fi* FMI had 55% higher attendance rates than the *No* SAC and *Dk* FMI, respectively. In most aspects, the *Is* SAC and the *Dk* FMI were at each end of the scale, while the *No* SAC and the *Fi* FMI often were relatively close (Table 1).

The crude fractions showed that where the police regulated admission, mainly victims reporting ≤ 24 hours were sent for examination at FMI. Within the self-referral systems where victims were free to choose when to attend, arrivals were spread over a wide time span. Yet, relative to the size of the population, as many or more were seen acutely at SACs as at forensic institutes, and the SACs performed more FMEs than the FMIs.

Regarding the reported assaults the *Dk* FMI showed the highest crude fraction of penetrating assaults (rapes), *Is* SAC the lowest, i.e. *Dk* included few other assaults (attempts) whereas *Is* saw several kinds of assault. When controlling for population size, the results on penetrating assaults were reversed; *Is* SAC seeing fourfold more than *Dk* FMI. As for the attempts, the *Is* SAC showed considerably higher figures, both in crude fractions and relative to the population; whereas the other three centres had pretty low and similar results (Table 1). The results on attempts constituted an important difference between the two SACs.

In the majority of cases at all centres, only one perpetrator was involved, and most perpetrators were unknown or peripherally known to the victim (Table 1). However, when correcting for the size of the population, 5 – 7 times more assaults by known perpetrator were seen at SACs than referred to FMIs.

The post-hoc correction of numbers of police-reported in *No* resulted in only minor alterations regarding reported fractions of subgroups like multiple perpetrators/ violence including holding/ disclosed injuries at examination, as compared to the original publication where reporting was based upon information from SAC alone (corrected data not shown[1]). In both the original and the revised version, the *Is* SAC diverged markedly from the other centres by higher attending rates, a higher number of attempted rapes, less use of violence and weapons and less injuries in addition to the victims being younger.

Paper II – summary

Sexual assault centres: Attendance rates, and differences between early and late presenting cases

Nesvold H, Friis S, Ormstad K.

Acta Obstet Gynecol Scand 2008;87:707 – 15

A total of 354 cases presented at Oslo SAC during the years 1996 and 1999; 6% males, 8% of non-Western origin.

Attendance rates showed that 0.12% of the female at-risk-population aged 14 – 55 yrs consulted SAC in 1999; 0.31% in the 14 – 23 age group and 0.07% in the 24 – 55 age group. In the older age group, the Oslo population survey disclosed a 1 – 2% annual incidence of sexual violence (1% when focusing rape, 2% when including rape, attempt at rape and forced sex) (54). Thus, in this age group, an estimated 3.5 – 7% of all female victims of sexual assault presented at SAC. There was no survey suitable for comparison with the younger age group.

Cases presenting in time for FME (early cohort n=278, 78.5%) differed from those later presenting (late cohort, n= 76, 21.5%) in several aspects.

[1] In general, all previous results regarding reported cases are maintained or strengthened, none reversed.

Early arriving victims were older (mean age 28.3 yrs) and included 90% of those with an addiction problem. A majority of 78% was escorted to SAC, 31% by police. The perpetrator was a stranger in 55% of the cases. Two thirds of the early presenting assaults were penetrative; the remaining third included almost 90% of all non-penetrative and suspected/vague cases. Forty-eight (17%) of early presenting victims were hospitalised, usually for a short observation in the emergency ward, and 55% of the medically examined complied with follow-up.
The late cohort of 76 cases comprised more adolescent and young victims (mean age 24.3 yrs); almost half of these were escorted. There were less non-acquainted perpetrators (36%), the sexual acts mainly penetrative (85%). Methods of coercion among late arrivals did not deviate significantly from the early cohort, except that verbal coercion significantly increased the odds for late arrival. Victims in the late cohort were medically examined in 35 (46%) of the cases, and 80% of these complied with follow-up (n.s.). Only one person was hospitalised.

Adjusted odds demonstrated an association between young age and late arrival, as odds decreased by 0.96 (CI 0.93 – 0.99) per increasing year. Odds for late arrival were increased if the perpetrator was a partner (3.6, CI 1.4 – 10.0) or an acquaintance (2.5, CI 1.4 – 4.4), as compared to strangers. Odds were also increased where verbal coercion was present (2.9, CI 1.1 – 7.7) as compared to violence exceeding holding. Merely suspected abuse and cases of vague explanation showed reduced odds (0.3, CI 0.1 – 0.7) compared to the penetrative assaults.

Counselling (300 cases in total) and further referrals occurred equally often in both cohorts; 44 (12%) somatic and 138 (39%) psychiatric. Several cases affected particularly vulnerable victims, totally 163 (46%) cases, 158 victims. The five females attending twice, all in the early cohort, had all been exposed to sexual abuse prior to first consultation, and two had an addiction problem. Thus total numbers of previously abused victims are 109, total numbers of addicts 59. The 21 physically/mentally handicapped and the 13 diagnosed with psychosis attended only once each. Apart from victims with an addiction problem, vulnerable groups seemed just as often present among early and late presenting victims.
Nineteen (5%) of the victims were deceased by 2005, their median age at consultation was 30 yrs (range 20 – 59 when excepting two > 80 yrs).

Paper III – summary

Sexual assault centres and police-reporting - an important arena for medical/legal interaction

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Of the 354 cases seen at SAC, 180 cases were registered with the police, 177 with Norwegian police.
In the early cohort (n=278) where victims attended in time for FME, 154 (55%) were reported; while 26 (34%) of the cases were reported among victims presenting later than a week post-assault. Median interval from *assault to reporting* was one day in the early cohort and 33 days in the late cohort.

In the early cohort, the following variables were significantly related to increased likelihood of reporting: age ≥ 30 yrs, serious handicap, violence more than holding, single perpetrator, police escort to SAC, the use of SAC services, presence of physical injuries. Variables related to reduced likelihood were: age 18 – 29 yrs, drug/alcohol addiction, exploitation during inebriation, suspicion of involuntary intake of alcohol/drugs; vague description of or inability to describe sexual act/coercion/perpetrator; as well as absence of physical injuries at examination.
In the late cohort, serious handicap was significantly related to increased likelihood of reporting, while individuals who had previously been subjected to sexual abuse were less likely to report.

FME was performed in 238 cases, 142 (60%) of these were registered with the police. Consequently, 96 (40%) of the FMEs at SAC were performed "in vain" since these assaults were not registered; however, 17 of these victims were escorted by police and police-involvement was taken for granted.
In the early cohort, 111 (70%) of the reporting victims consulted SAC and police within same day ±1. In 34 cases, FME preceded reporting by ≥ 2 days. In these cases FMEs would have lost considerable quality if FME had to await a police request, as occurs in police-dependent organisations. Consequently, these 34 cases represented the police's forensic benefit of self-referral, constituting 24% of the reported FMEs.

In the late cohort, police contact occurred equally often prior to SAC as after, 57% of the cases within ±1 month of SAC consultation, total range from four years before to two years after, and with no definite peak related to consultation.

We made three logistic regression analyses to see which variables most strongly predicted the likelihood of reporting.
The first two analyses comprised the early cohort only. The first one restricted the independent variables to victim and assault characteristics, i.e. information available before examination. Age ≥ 30 yrs was related to increased likelihood (OR 3.1, CI 1.7 – 5.8), whereas reduced odds were seen if victim had an addiction problem (OR 0.4, CI 0.2 – 0.7), if victim was exploited during intoxication (OR 0.4, CI 0.2 – 0.9) or was unable to describe coercion (OR 0.0, CI 0.0 – 0.5).
The second analysis added use of services/examination results as independent variables. The most important variables related to increased likelihood were age ≥ 30 yrs (OR 3.2, CI 1.7 – 6.1) and age <18 yrs (OR 2.7, CI 1.1 – 6.9), injuries disclosed at FME (OR 2.9, CI 1.1 – 7.4, where only extragenital injuries were found; OR 20.1, CI 4.3 – 94.9, when both anogenital and extragenital injuries were present), and compliance with medical follow-up (OR 2.8, CI 1.6 – 5.0). Inability to describe perpetrators/no information was associated with reduced odds (OR 0.05, CI 0.01 – 0.3).
The third analysis comprised the late-comers only and identified no variables of significant influence.

The attrition, of cases from SAC to police related partly to victims' behaviour and partly to police decisions.
In a total of 174 (49%) of the cases seen at SAC, the victims avoided police registration; 29 of these had been police-escorted to SAC without returning to file a complaint. Among the police-registered cases 24 victims withdrew their complaints; 11 early, 13 during ongoing investigation; all these were in the early cohort.
Regarding the police-related attrition; according to recommendations, all 91 police-escorted victims should have been registered at least with a preliminary report, but only 24 preliminaries were seen. The 29 police-escorted victims not registered were thus among the 67 without any preliminary and consequently barred from outreach by police; these 29 did not readdress at own initiative.

The police might have referred more victims to SAC. Totally 197 cases of rape were registered in the Oslo precinct these years, 103 of these presented at SAC, 94 (47%) did not. Among our police-registered victims, we identified seven reporting swiftly in time for FME but attending too late for proper FME, and four arriving after the investigation had been closed.

Paper IV – summary

To be used or not to be, that is the question.

Legal use of forensic and clinical information collected in a self-referral Sexual assault centre

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Among the 177 SAC cases registered with the Norwegian police. SAC information remained accessible to the police in 163 cases. In 134 of these, FME-based data were available (forensic cohort); and in 118 cases the FME included trace evidence sampling (trace evidence subgroup). Only clinical information was available in 29 cases, in which forensic examinations had not been performed (non-forensic cohort).
The police did not collect all available SAC information. FME documentation was requested in 112 (84%) cases and 60 (51%) of the trace evidence kits were analysed. In the non-forensic cohort SAC-documentation was collected in only 9 cases (31%).

Request for FME documentation was clearly associated with cases police-classified as rape and complaints filed during the first eight months of a year (OR 11.1, CI 3.5 – 34.9 and OR 4.2, CI 1.4 – 12.5). Victim being drug/alcohol-addicted was associated with reduced odds for collecting documentation (OR 0.3 CI 0.1 – 0.9).
Similar associations were found regarding trace evidence analysis; cases police-classified as rape and complaints filed during the first eight months of the year showed increased odds (OR 6.3, CI 1.4 – 28.5 and OR 6.7, CI 2.4 – 18.3), similarly if victims were < 20 yrs (OR 6.9, CI 2.1 – 22.8). Addiction was unrelated, whilst cases where the site of assault was perpetrator's area showed reduced odds (OR 0.2, CI 0.1 – 0.5).

Interaction analyses indicated that collection of documentation by the police was even more determined by police-classification, time of the year and non-addiction when perpetrator was unidentified; the high odds were 5 – 10 folds higher and the low odds similarly lower than with a known perpetrator. However, several confidence intervals were wide and the results are therefore somewhat uncertain. The results are referred as they have clinical relevance.

In *the non-forensic cohort*, information was only collected in cases police-classified as rape and all but one perpetrator was known to the victims.

As documented above, the likelihood that the police would use the SAC information, was clearly related to whether the police classified a case as rape or not. It is therefore interesting that the police classification was only partly consistent with victims' description at SAC. In 11/133 (8%) cases described as penetrative or strongly suspected penetrative assault; the police used other codes than rape (e.g. sexual act with child, exploitation of dependency; see Paper IV, Table I). Oppositely, 9/30 of those described as non-penetrative or vague at SAC were still classified as rape by the police.

Practical use of SAC casework

Trace evidence analyses were requested in 60 cases; extrinsic DNA detected in 27 cases, 21 results matching a suspect. Results supporting sexual contact (anogenital injuries and/or sperm/extrinsic DNA) were found in 68 cases. Where such evidence was present, a higher proportion of perpetrators admitted sexual contact 34/43 (79%) vs. 28/46 (61%) with no such evidence (p=0.06). Sexual contact was denied in 27 cases; police could refute the claim in 9, but did not explore these opportunities in 15 cases[2] as analyses were not requested.
Among 79 initially unidentified perpetrators, 41 were eventually identified, 8 (20%) identifications confirmed by DNA.

Most FME files documenting injuries were collected, including the 37 most severe ones, but only in one case expert interpretation of injuries was requested.
Supportive non-forensic evidence like documentation of post-assault consequences was present in 45% of the cases irrespective of cohort, mainly conveyed as short notes at SAC's initiative. Information that police had to request specifically, e.g. from counselling or family

[2] In three cases analyses had been performed, but no seminal constituents found.

physician, was collected in 24% of available cases. However, elaborate descriptions and interpretation of psychosocial sequelae were not present in the police files, and had according to SAC not been asked for.

SAC information and legal outcome

Table 2 includes all cases in these series registered with the Norwegian police, and is assembled especially for this presentation to demonstrate the overall result of attrition. The table presents key information from Paper II – IV, sorted according to FME-based documentation being present in the police files or not. Legal outcome is included, as the impact of FME and SAC information is an issue of concern.

The cohort where FME-documentation was present showed higher proportions of cases police-classified as rape, early presented complaints, forensic examinations of crime scene, and files including documentation of sequelae. The latter three proportions were even higher among cases taken to court (data not shown).

Significantly more cases were taken to court and fewer cases were classified as non-criminal where FME documentation was present.

Table 1. Paper I. Inter-centre comparison: revised presentation of case profiles

Data on 358 female cases of sexual assault, seen at Forensic Medical Institutes (FMI)/Sexual Assault Centres (SAC) in Denmark (Dk, FMI), Finland (Fi, FMI), Norway (No, SAC) and Iceland (Is, SAC) during the study period. Figures in bold represent police reported cases per 100,000 females at risk (14 – 54 yrs). Exact figures are given in parentheses; percentages are calculated within total number cases with the respective information at each centre.
The presented Norwegian results are based on corrected identification of police-registered cases.
Regarding relationship between complainant and perpetrator, this version includes cases with both single and multiple perpetrators (among the latter, all unknown/peripherally known), but not cases with no information.

	Police reported				**Not reported**	
	Dk n=62	Fi n=86	No n= 72	Is n=39	No n= 64	Is n=35
Mean age in years [range]	24 [12-51]	28 [14-47]	28 [15-59]	24 [12-48]	26 [14-80]	25 [14-58]
Number/100,000 women at risk † Age group 12-54	**18** **	**28** **	**48** **	**78**	42 *	68
Performed FME per 100,000 at risk (n)	**15** *** (53)	**28** *0.07‡* (85)	**38** *ns* (57)	**56** (28)	25 *ns* (37)	36 (18)
Arrived within 24 hrs per 100,000 at risk; (n); %	**14** *** (50) 81%	**27** *ns* (81) 94%	**23** * (35) 49%	**42** (21) 54%	15* (23/63□) 37%	32 (16) 46%
Arriving > 7 days; % (n)	13% (8)	0 (0)	15% (11)	28% (11)	24% (15)	31% (11)
Rape (penile penetration) per 100,000 at risk; (n); %	**16** * (55/ 61) 90%	**22** ** (67/86) 78 %	**35** *ns* (53/72) 74%	**50** (25/39) 64%	30 *ns* (45/63□) 71%	46 (23/35) 66%
Attempted rape per 100,000 at risk; (n); %	**1** *ns* (4/61) 7%	**0,7** ** (2/86) 2%	**4**** (6/72) 8%	**18** (9/39) 23%	3 *ns* (4/63□) 6%	4 (2/35) 6%
Perpetrator unknown / peripherally known per 100,000 at risk; (n); %	**12** ** (44/57) 77%	**21** *ns* (63/79) 80%	**28** *** *(42/72)* *58%*	**56** (28/39) 72%	21 *** (31/55) 56%	54 (27/35) 77%
Perpetrator known , including intimate partner per 100,000 at risk; (n); %	**3** *ns* (13/57) 23%	**4** *** (16/79) 20%	**20** *ns* (30/72) 42%	**22** (11/39) 28%	16 *ns* (24/55*)* 44%	16 (8/35) 23%

† When calculating attending rates per 100,000 females aged 12 – 54, three cases affecting older women (1 *Is,* 2 *No*) were excluded in the calculation of attending rates. These had to be included when calculating other figures per population at risk, as the common database was country-wise, not individual.

* $p \leq 0.05$ ** $p \leq 0.01$ *** $p \leq 0.001$
Chi squared tests were calculated for 2x2 tables entering the exact fractions from two neighbouring columns; the labelled one with the one to the right. Thus the p-value results presented for *Dk* refers to the comparison between *Dk* and *Fi,* the *Fi – No* comparison is presented with *Fi*, and the *No-Is* comparison with No.
‡ Regarding FME; the p value was 0.001 for the *Fi / Is* fractions.

□ For one case, information of the assault was missing.

Table 2. Paper IV. Presence of FME documentation in police files and legal outcome

The 177 cases registered with the Norwegian police, divided in Cohort I where FME documentation had been requested by police, and Cohort II where no FME documentation was present in the police files. Various forms of attrition caused the abscence; FME had not been performed, was not available or documentation had not been requested. FME was not performed if victim was unwilling or arrived too late.
Legal outcome and important background information of the cases in each cohort is presented

	COHORT I FME documentation present in police files		**COHORT II** FME documentation not present		**TOTAL**	
n =	**112**	**%**	**65**	**%**	**177**	**%**
LEGAL OUTCOME						
To court, total *	***27***	*24,1**	***5***	*7,7*	***32***	*18,1*
- Convicted penalty code	24		3		**29**	
- Civil conviction	1		1		**1**	
- Acquitted	2		0		**2**	
- False complaint, convicted	0		1		**1**	
Fined	***1***	*0,9*	***2***	*3,2*	***3***	*1,7*
Dismissed	***76***	*67,9*	***42***	*61,7*	***118***	*66,7*
- Evidentiary reasons total	**49**	*43,8*	**22**	*33,8*	**71**	*40,1*
- Perpetrator not identified	**25**	*22,3*	**16**	*21,3*	**41**	*23,2*
- Other reasons	**2**	*1,8*	**4**	*6,6*	**6**	*3,4*
No- crimed ***	***8***	*7,1***	***16***	*24,6*	***24***	*13,6*
BACKGROUND						
Cases with identified perpetrator ¤	**84**	*75,0¤*	**40**	*61,5*	**124**	*70,1*
Police-classified as rape	**98**	*87,5*	**41**	*61,5*	**139**	*78,5*
Victim's description at SAC:						
Penetrative assault	84	*75*	42	*64,6*	126	*71,2*
Non-penetrative assault	13	*11,6*	16	*24,6*	29	*16,4*
Amnesia, suspected assault	12	*10,7*	6	*9,2*	18	*10,2*
Vague story	3	*2,7*	1	*1,5*	4	*2,3*
Interval assault – police						
<4days	**87**	*77,7*	**32**	*49,2*	**119**	*67,2*
> 7days	**13**	*11,6*	**30**	*46,2*	**43**	*24,3*
No of scene investigations	**38**	*33,9*	**7**	*11,5*	**46**	*26,0*
No of supplementary doc	**60**	*53,6*	**14**	*21,5*	**74**	*41,8*
Withdrawals of complaint						
- early	**0**		11	*16,9*	**11**	*6,2*
- late	**11**	*9,8*	2		**13**	*7.3*

* p = 0.02 (calculated according to numbers of cases with identified perpetrators) *** p = 0.001 ¤ p = 0.06

Comments to Table 2

In the 65 cases where no FME information was present in the police files;
- in 14 cases information was unavailable to police due to early withdrawal of complaint or investigation was closed before arrival
- in 22 cases FMEs were available
- in 59 cases only other SAC information was available

As more perpetrators were identified in the cohort where FME documentation was present, each cohort was subgrouped according to identified perpetrator or not; data not shown. The main differences between the subgroups related to numbers of cases taken to court and dismissals due to unknown perpetrator.

Among cases taken to court:
In cohort I, 27 cases were taken to court; 21 (78%) were classified as rape by the police; 24 (90%) were reported <4 days; 16 (59%) included a site of assault examination/brief inspection; 18 included supplementary medical documentation.
In Cohort II, five cases were taken to court; 4 were rape-classified; 2 were reported within 4days; 2 included a brief inspection at site of assault; 3 included supplementary documentations.

Dismissals:
Fractions of dismissals due to evidentiary factors were similar in the two cohorts.
In cohort I, all but two cases of unidentified perpetrator were “correctly” dismissed due to unknown perpetrator.
In cohort II, only two thirds of the cases of unidentified perpetrator were thus dismissed and 8/25 were no-crimed.
No-criming occurred more commonly in Cohort II; in 7 of these cases victims had withdrawn the complaint early.
In cohort I, 3 late withdrawals were no-crimed.

DISCUSSION

In cases of sexual assault, medicolegal examinations at police request have been performed at forensic medical institutes (FMI), and within wards of gynaecology and emergency. Self-referral centres for victims of rape and sexual assault (SAC) have been established since the seventies.

Previous reports from these services have focused on victims and assaults; examination results related to victims' age (55), to described violence or to the relation between victim and perpetrator (35;52;56); anogenital injuries related to forced and voluntary sexual acts (57-59); factors associated with follow-up (60), police-involvement (30;42;43;61) and legal outcome (8). This way, medical literature has strived to improve the fundaments of expert statements, hoping to improve legal outcome.

This thesis explores inter-centre differences in attending patterns (Paper I), and the Oslo SAC's success in reaching the target group, how SAC services are used by victims and legal authorities, police-involvement, medical/legal interactions, the attrition and the effect on legal outcome (Paper II –IV).

In the following, head issues from each paper are discussed separately before the overall discussion.

Paper I

Comparison of different services for sexually assaulted

Self-referral sexual assault centres (SAC) and forensic medical institutes (FMI) are principally different facilities which are both providing medico-legal documentation. SACs serve two intentions: to assist victims and to provide medico-legal information, whilst FMIs serve only the latter. While victims may consult SACs directly for any help they may need, the police regulate admission at FMIs, and cases have passed three levels of selection before presentation; victims have to approach the police within time for FME, the police must decide whether to request an examination, and victims must accept the examination.

Thus, terms for attending differ between SACs and FMIs. In a comparison, the impact should be searched in the patterns/profiles of police-reported cases as FMIs see only these. At SACs, assistance to non-reporting victims represents an additional gain.

The results of Paper I clearly show major differences between SACs and FMIs concerning number of cases in relation to catchment population (attending rates), interval to arrival, case profiles including age and victim/perpetrator relationship. When related to population, both SACs receive more assault victims, especially among adolescents/young adults and those coerced by a known perpetrator, as well as those hesitating to attend. Attending rates were however rather similar for those > 24 yrs regardless of type of centre. The SACs also receive more acute-presenting victims and perform more forensic medical examinations than the FMIs.

The recalculated figures per 100,000 females at risk provide the best fundament for inter-centre comparisons, disclosing divergences between the two kinds of organisations, as well as variations among services of similar organisation. In most aspects we find a falling gradient; the *Is* SAC seeing most, followed by *No* SAC, *Fi* FMI and *Dk* FMI.
Several differences seem robust. Some are clearly linked to attending rates, like performed FMEs; whereas others, like age and victim/perpetrator relation, illustrate that the services attract different cases.
The observed differences may result from discrepancies in occurrence of sexual assaults and/or in willingness and barriers to seek help/report. At FMIs the police are the final gatekeeper, and their attitudes towards requesting examination are decisive. So far, information on these topics is limited.

Incidence vs. thresholds
Population surveys on incidences vary in methodology and are difficult to compare. Most Nordic surveys focus on domestic violence (54;62-64), some describe total incidence of sexual assault (54;62;65).
Yet, last years' incidence of sexual assault among *Dk* women 18 – 70 yrs is lower than estimates from many other North European/Western countries, being 0.2% (65) vs. 0.5 – 2% (7;28;54;62;63;66;67)[3]. In a Nordic multicentre study, *Dk* shows the lowest lifetime

[3] The Danish study was performed in 2003, the others from 1997 to 2006.

prevalence of severe sexual abuse >18 yrs, i.e. penetrating/attempts at penetration, whereas the *Is* prevalence is high (21). *Is* rank high also when comparing European police-reported rapes in relation to total population (26). Thus, the present attending rates with *Is* and *Dk* at opposite ends of the scale have some parallels in surveys, and might reflect real incidence differences.

However, inconsistent ranking of prevalence and incidence in the mentioned studies disturbs this conclusion. In the Nordic comparison, the low *Dk* prevalence of severe abuse is contrasted by high *Dk* last years' incidence of any sexual abuse (21); and *Fi* ranking similar to *Is* in one study (21) is equal to *Dk* in another (26).

In general, survey results on prevalence/incidence are influenced by methodology and respondents' varying readiness to inform (1;21;68). The latter may show inter-community variations as inclination to identify and report sexual incrimination is affected by rape myth acceptance (69-71) and education, age and income (1). Such variations could be confounding by affecting both survey incidences and attendance rates in the same direction, e.g. both being unduly low in communities where rape myths are more widely accepted.

For these reasons, it is difficult to estimate the true ranking of Nordic incidences and their impact on present results may only be presumed[4].

Regarding the present variations in attendance rates, we assume most of the variance to be caused by differences in threshold rather than incidence, as the police-reported cases seen at SACs/FMIs are strongly selected. The seen victims constitute only 0.02 – 0.08 % of the female populations at risk, which is less than a tenth of the mentioned European assault incidences (7;54;62;63;66;67).

Public information may modify thresholds to report/attend (21;28;72;73) and such influence may have contributed to the present results. The *Is* SAC had an active PR strategy at the time of the study; the *No* SAC was less active due to lack of funding. In general, public health services do not have strong traditions, nor funds for advertisements, the police even less. Furthermore, rape investigation is more often negatively pictured in the media, a factor that may reinforce the barrier against swift police contact.

[4] If e.g. true incidences are higher in Finland than Norway, the barriers for attending the two centers diverge considerably more than indicated by present results, as shown attendance rates for reporting victims are higher at *No* SAC than at *Fi* FMI. Oppositely if *Fi* incidences are lower, the barrier differences might be less or even reversed.

Both SACs in these series allow for arrivals later than a week post-assault, which seems to facilitate youth arrivals (Paper II); at *Is* SAC, age-specific information campaigns, good media coverage and a location easily accessible to the young may also contribute.

Selection by police

At the FMIs, the police practice regarding request for FME represents a final selection that might be traced in the case patterns. The present *Dk/Fi* results in percentages indicate that police favour first days' reporters, penetrative abuse and unknown/peripherally known perpetrators when requesting FME in cases of sexual assaults affecting adolescents/adults. The time criterion probably is crucial. The late examined at the *Dk* FMI are exceptions, all 12 – 13 yrs old; and in cases of child abuse, late reports and examinations are more common (74;75). Most likely, *Dk/Fi* police met more complainants reporting later than a day post-assault, considering the variations shown in crime statistics (23;25;76-78), the variance in time before arrival at the SACs, and victims' documented reluctance to expose sexual assaults (66;79).

From a medicolegal point of view, there is no reason to practice a 24hr limit for FME, as injuries may be present for several days, and a three-day limit for forensic sampling was already widely accepted at the time. Understandably, the police have less interest in requesting examination of victims arriving too late for FME, but the demonstrated selection seems unduly strict.

Penetrating assault seems to be another criterion for police request of FME, but the strong dominance of penetrating assaults at the *Dk* FMI may be misleading as only rape and rape attempts were included in the pre-existing study providing the *Dk* data. We were unable to ascertain if also suspected assaults during amnesia were seen at this FMI. If so, the Danish total numbers of referred cases would be higher and the fraction of penetrating assaults reduced. These uncertainties do not affect the present calculation of penetrating assaults related to population at risk, where the lower numbers indicate a stricter referral practice in *Dk* than in *Fi.* Possibly, strict police attitudes may be associated with higher thresholds for involving the police, even in cases of rape. Attempted rapes/non-penetrating assaults seem to be rarely considered for FME. At the time of the study, there were sparse possibilities for detecting biological trace evidence other than sperm; the evidentiary value of FME in cases of attempts was thus reduced, but injury documentation would still be important. However, victims themselves might not perceive any purpose in being examined, c.f. the low *No* number seeking help after attempt at rape.

The fact that mainly victims of unknown/peripherally known perpetrators were referred for examination at FMIs and that cases with known perpetrator (related to population) were rare at the FMIs, might be caused by an interaction of several factors. The threshold for reporting to the police is lower in cases where the perpetrator is a stranger (7;63;66;80;81), thus such cases may dominate in the total reported case panorama. Victims of known perpetrators are less likely to define the assault as such (7;61;66;72;82;83), and thus delay reporting, perhaps until too late for FME. And finally, the police may have less trust in such reports, or foresee difficulties in proving force and unwillingness when acquainted persons have sex (19;84), and thus not bother with the examination.

These case patterns suggest how the police select cases for examination, but the extent of selection cannot be properly established without similar information on total numbers of reported assaults. Scandinavian SACs have experienced that only half of all police-reported rapes/assaults are seen at SAC (85) (Paper III), and we might expect a selection as strong or stronger in a police-dependent organisation.

The SACs

Probably as a result of the described thresholds and selections, the case profiles in relation to population size show that both SACs receive more cases with known perpetrator and non-penetrating assaults than the FMIs, and all the same more cases with peripherally known/unknown perpetrators and penetrating assaults. The *Is* SAC saw the highest proportions of non-violent coercion and physically non-injured victims (Paper I).

When establishing SACs, we hoped to reach a higher proportion of all subjects exposed to non-consensual sexual activity; including those who were victims to “common non-stereotypic” assaults (known perpetrator and holding/verbal coercion) as well as other than penetrative sexual acts. The presented results indicate that some of these aims have been achieved, but more so in the *Is* SAC.

Perhaps attendance must increase to a certain level before really widening the case panorama, but the diverging features of the *Is* data may also be linked to the preponderance of young persons, as these are reported to suffer less extragenital physical injuries (28;86;87).

Comparing services

Inter-centre comparisons like this are challenging as attendance is influenced by many factors and equivalent surveys on sexual assaults are rare. Yet, inter-centre differences are implicitly

informative on attrition by disclosing the variance in attending and may indicate practices to adapt or avoid.
In the present comparison, different thresholds for attending the services are likely; obviously between SACs and FMIs but also among SACs and FMIs. SACs prove beneficial compared to the FMIs as SACs assist more persons, especially among the young who are most at risk (28;63;66;88;89), and provide the police with more FMEs in reported cases as more victims arrive early when having direct access. SACs also demonstrate that hesitation in help-seeking is common. Service and assistance linked to FMIs with police-regulated admission will only be available to a highly selected group of victims. Still, this is the only option for FME in many countries. The present study indicates that SAC should be the recommended model.

The original and revised results of Paper I clearly demonstrate how information on police-reporting is incomplete when based on routine communication between SAC and police. To perform studies like the present ones, detailed information on police registration is mandatory[5].

Paper II

SAC, attendance rates and differences between early and late presenting cases

The comparative section elicits questions regarding the selection of victims attending and reporting. This section further explores the gap between cases actually occurring and cases seen, attending patterns and use of services, i.e. SAC's success in reaching the target group, and identification of services actually requested by victims.

In these series, only 3.5 – 7% of the estimated assaulted females in the age group 24 – 55 yrs, consult Oslo SAC[6].

[5] In Norway, permission to combine medical and police data will merely be granted for defined research projects; thus, true information upon police-reporting at SAC cannot be monitored as a routine. For internal use, SACs may monitor numbers of cases where the police request information and escort victims. At Oslo SAC, the former has never exceeded 45% (47), suggesting a rather stable situation regarding police-reporting.
[6] Incidence and prevalence results in surveys might be skewed due to fabrication, a selection of respondents with positive answers resulting in overrepresentation, or nondisclosure, not-responding resulting in underrepresentation. When discussing methods, underrepresentation is considered as the most serious threat to validity (68).

Whether those presenting constitute a similar small fraction of the actually assaulted in the younger age group is unknown; attending rates among those 14 – 23 yrs being four times higher than among those 24 – 55yrs. However, those aged 16 – 23/24 yrs are more at risk of sexual assault (28;63;66;88;89). Among Norwegian university students 1.2% reported exposure to rape/ attempted rape the previous year (90), while a youth study in Oslo found a 6.1% annual incidence of sexual offences among females aged 15 – 16 yrs (91); the latter including non-contact offences outside SAC's main target group (e.g. harassment). However, a Swedish study has recently reported a 14% last year incidence of sexual abuse among females aged 16 – 23 yrs, 6% having been exposed to penetrating assault or close attempts thereof (92). In several other Western countries the risk has been found three to four times higher for adolescents/young adults than among the older (28;66;88;93). Thus, the higher attending rates among the young may reflect a real risk difference, rather than an increased readiness to seek help. Their propensity for late arrival indicates a high threshold for attending.

A rounded estimate of the gap between the actually assaulted adolescents/adults vs. those attending SAC would then be 90 – 95%; SAC seeing 5 – 10% of the occurring assaults. Correspondingly, surveys addressing help-seeking behaviour report that 10 – 36% of the victims of sexual assault/domestic violence seek medical aid (28;63;66;67;89;94-96). However, few studies specify sexual assault per se, type of medical institution or post-assault interval.

Referral patterns and case profiles depict the thresholds for help-seeking as the fractions of victims not referred/escorted by police represent those benefitting from the direct access and the wider entrance at SAC. High fractions of non-stereotypic assaults also signify lowered thresholds, as these are less likely to be presented than the stereotypic ones (80;94;95;97;98). This way, attendance patterns can be surveyed for threshold variations.

The present study embraces a marked rise in numbers attending the Oslo SAC occurring in 1998/99[7]. Yet, both included years (1996 and 1999) are similar in fraction police-accompanied and in case profiles. The "classical" rapes are quite few and only 26% of all victims are police-escorted; indicating a rather low and stable threshold in Oslo. For comparison, at other Scandinavian SACs the fraction of police-escorted attendees vary from

[7] See Material and Methods

37% to 48% (99-101), one later rising to 63% (102); whereas in other Western countries 69 – 79% arrive with police escort (41;49;75;103;104).

Historically, a wider spectre of cases has been encountered over the years. In 1987, most cases at Oslo SAC were acute, 85% penetrative, 69% committed by strangers. Suspected assaults during amnesia and unclear cases were uncommon (4%) and addicts were not mentioned (30;45;105). A similar trend is seen at the Finnish FMI where the fraction of physically non-injured rose from 10% in the early eighties to 40% in 1996, parallel to a doubling of annual numbers examined (33) (see Paper I). In a US emergency department study, the numbers examined increased by 50% from 1974 to 1991, and cases with known perpetrators as well as injuries and reported use of force were increasingly common (106)[8]. The rise in attendance numbers /rates at Oslo SAC 1998/99 could be due to a reduced threshold resulting from specific PR campaigns[9]. However, the rise may also reflect an increase in actually occurring assaults, related to an increase in alcohol consumption and alcohol-related assaults. In Oslo, increasing alcohol/drug consumption among young people runs parallel to SAC attendance; a marked increase in the late nineties, then stabilising (108;109). The association between alcohol consumption and sexual assaults is alarming and should be more explicitly addressed (28)[10].

It is difficult to assess how many of the assaulted individuals that actually may benefit from SAC services. Sexual assaults convey social, psychological and somatic health risks (2;5;113-122), and there are strong associations with alcohol/ substance abuse (2;116) and revictimisation (1;123). Figures on post-assault problems vary; 52 – 94% among victims of forced sex (5;21;63;66), 62% of those exposed to harassment (63). It seems that known perpetrators may trigger more post-assault problems than strangers (63;113;124). Little is known of spontaneous recovery. Several studies indicate an ambiguity towards approaching health services: 30 – 45% feel uncomfortable by approaching medical services (125), about

[8] The increase in violence and injuries was somewhat unexpected, but the barriers to attend after abuse from an acquaintance/partner are probably primarily reduced in cases where the offender uses physical violence. Known perpetrators have been found correlated with more violent assaults (46), some specify intimate partner and stranger assaults as the most violent (52;107).

[9] A massive public campaign in 1996/97 and an education programme towards professionals in schools, police, health and social welfare in 1997/98.

[10] The Oslo Youth Study describes a clear association between alcohol consumption and sexual victimisation (91). The SACs register more assaults occurring during weekends (Paper I); in these series, 84% of those answering admitted to pre-assault voluntary drinking (paper II), 90% in 2007 (47). The police also register an increase in reporting rape victims confirming inebriation at the moment of rape, 50% in 2000, 70% in 2007 (23), and a Canadian SAC documents rising incidences of suspected drug-facilitated rapes(110), and several US authors discuss the bidirectional relationship between alcohol/substance use and sexual assault (28;111;112).

50% are not interested in informing the family physician (94;126) and very few inform spontaneously (21;126). Probably, considerably more victims than those actually seen may profit from SAC's services.

In this study, attending victims display a variety of vulnerabilities and needs, but apart from gender and ethnicity, victims' particularities and vulnerabilities are seldom described in SAC-based literature (29;46;127). Some groups are assumed to be underrepresented as they are more at risk of sexual abuse: addicts (1;116;128;129), homeless (130;131), physically and mentally handicapped/diseased (1;91;132-135), likewise persons who may face stronger taboos e.g. males (136-138), homosexuals (139;140), cultural and ethnic minorities (69;81;96). At SACs males constitute up to 5 – 8% (29;48;49) (Paper I); whereas in two Scandinavian youth studies the male : female ratio of sexual victimisation is nearly 1:3 when including non-contact offences (91;92), 1:15 if focusing penetrative assaults (92).
Less is known of incidence and prevalence in the Non-Western population, in Oslo comprising approximately 15 – 20% of the residents[11]. However, Non-Western youths seem better protected than Norwegians (91), unless taking on Western drinking habits (Line Schou, personal communication, June 2009). The latter constitute a substantial subgroup among Non-Western victims at SAC. Married women exposed to sexual assault as part of domestic violence represent a second subgroup. The fraction of Non-Western victims at SAC, 8% in these series, has later reached 20% thus corresponding with the fraction of Non-Westerners in the population.

Obviously, victims need more than acute examination and counselling. Even late attendees request more medical services and further referrals than initially presumed, not surprising when taking into account the documentation on post-assault physical problems (2;4;5;113;141). In general, there is a lack of SAC-based follow-up studies addressing morbidity and mortality (4;5;142). This study's results on vulnerability, morbidity and mortality ought to be explored in replication studies. As standing, the necessity of supportive services is underscored. Among those dead after SAC contact, we do not know if any death was related to long-term consequences of the assault, or rather to a basic vulnerability – a few also suffered from fatal disease at the time of consultation.

[11] The Statistics Norway have rearranged their categorisation and according to the present definitions, persons from Africa, Asia including Turkey ,South and Central America as well as Norwegian born children of these, constituted 15% at the time of the study, 21% at present (crude figures informed by direct communication, Oct 2009).

The demonstrated differences between early and late presented cases are far more important than might immediately be recognised. Permitting delayed arrivals opens for other groups of assaulted to attend; younger victims, those verbally coerced/ forced to sex, or abused by known/intimate perpetrators. Similar characteristics are prominent in population surveys on sexual assault (54;63-66), and thus the late arriving seem more representative of the non-attending majority.

As underlined in the general discussion, it is to be expected that the majority of victims hesitate before exposing the incident and seek help. In order to reach out to this majority, strict time limits for consultation should be abandoned, and multi-disciplinary services should be available also for late attending victims, as these too display a variety of needs. Similar results were shown twenty years ago (143), without receiving practical attention.

Paper III

Police-reporting practices and police – SAC interaction

Reporting sexual assault to the police should be easy in modern countries embracing human rights and residents' welfare. Still, most assaults are not reported, victims hesitate to report and complaints are withdrawn.

Several steps have been taken to facilitate reporting in Norway; like free legal counselling by lawyer, civil compensation, crime victim support offices, and SACs offering FME irrespective of police involvement at arrival, so that medical evidence can be available in case of delayed reporting. These measures were present before the study and numbers of rape complaints have increased during 1997 to 2006/2007; in the country as a whole from 652 to 974, in Oslo from 105 to 196 (rape and attempt)(23;73;78). However, the fractions prosecuted dropped from 30% in 1990 to 14% in 2001(24). Similar trends are seen in several other Western/European countries, reporting rates increase (22;26), while prosecution/conviction rates remain stable or drop (22).

Our results, although dating from the late nineties when the increase started, disclose several points relevant to the discussions regarding police involvement, routine FME and medical/legal interaction, e.g. different reporting practices among early and late arriving victims and a complex interaction between police and SAC.

These data also allow a rough estimate of the gap between the actually occurring rapes and those reported. As half of all rapes seen at SAC were identified as police-registered, and these include half of all police-registered rapes from the Oslo precinct; the police and SAC are assumed to face gaps of similar order. If so, an estimated 5 – 10% of the actually assaulted in Oslo report to the police, 90 – 95% do not. For comparison, British and Danish crime surveys find 18% reporting among those sexually victimised (65;66), in Finland and Canada less than 10% (63;88), a Western review estimates 5 – 25% (7). A more recent US study concludes that willingness to report has not increased during 1991 to 2005 (28).
In Oslo, the later rises in numbers of police-reported rapes and SAC attending rates, do not necessarily imply that the gaps are reduced as there has been a marked increase of classic blitz attack rapes i.e. assaults where the threshold for attending/reporting is considered low.[12]

In this study, the early and late attending cohorts are shown to differ (Paper II) and the dissimilarities persist in this section. The cohorts appear to represent a minority vs. the majority; the late attending assumed representative of the majority not apt to involve SAC or police. Cohort differences are displayed in case profiles as well as in help-seeking and reporting practices.
Early attending victims more often involve the police, with sparse delay, two thirds report within two days of assault, and several SAC-based variables are related to reporting. However, those arriving early comply less well with medical follow-up and several of them withdraw their complaints. Thus, one might say that the early arriving minority shows a pattern of impulsive decisiveness with a tendency to regret.
Among late presenting cases, one third is reported to the police, no SAC-based predictors of reporting are identified, and victims hesitate longer before reporting; the median time gap is one month. Late attending victims constitute a very small proportion of all assaulted, but when these have decided, they comply with follow-up and withdraw no complaints, which indicate a "considered determination". Thus facilitating late applications might prove a better measure to reach the target group.

[12] At SAC, total numbers of cases increased from 208 in 1999 to 335 in 2007, the blitz attacks from 20 to 78, constituting half the total raise, in 2008 total numbers decreased by 41 and the blitz attacks by 40 (47).

The failure to identify associations with reporting in the late cohort may be related to the small cohort size less suitable for analysis. However, more factors than the present SAC-registered variables probably exert influence upon victims' choice regarding reporting.
Other studies demonstrate that victims give resembling reasons for help-seeking and reporting/not reporting. Stereotypic perceptions, social support, expectations to police/legal system/public services, ability to identify the incrimination, as well as trauma reactions represent the main influencing categories (7;28;41;80;88;94;144-147). These are further dealt with in the overall discussion. The relation to perpetrator may also hamper police involvement (61;94;146), while additional motives *for* reporting are to sanction the perpetrator, to protect others, fear of perpetrator/repetition, righteousness (28;146;148), to regain control or simply by impulse (148;149).
The lack of SAC-registered psychosocial factors may, in addition to sample size, explain why we were unable to find variables associated with reporting among late presented cases.

Reporting practices in the early cohort have importance for discussing selective performance of FME versus routine FME. Most of the presently included SAC-based variables are easily attainable at first visit and may serve as a fundament for selection as several of them are associated with reporting.
Based on information available before examination; victims having an addiction problem, having been exploited during intoxication or being unable to explain, are clearly less prone to report (Table 3, Paper III). However, in the analysis adjusting for FME/use of services most of these factors loose their predictive power; disclosed injuries at examination take precedence as predictors. Only cases where victims are unable to inform of perpetrators remain with low odds – these cases often need forensic assessment due to uncertainty whether crime has been committed.
Oppositely, age ≥ 30 yrs was the only factor positively related to reporting before examination, this factor alone is insufficiently discriminative. Selective FME, i.e. examining only victims most likely to report or omitting those less likely, is therefore not recommended.

Interestingly, adolescence becomes significantly associated with reporting when including use of services like performed FME into the logistic regression analysis, and the likelihood of reporting seems differently influenced in different age groups. Adolescents examined and not examined diverged markedly in reporting rates irrespective of numbers of injuries disclosed. Among those aged 18 – 29, reporting rates increased if FME was performed and disclosed

injuries. Those ≥ 30 yrs were more likely to report if examination was performed as compared to not performed, even when no injuries were seen, but their odds for reporting increased even more when physical injuries were present (data not shown).
Thus, it appears that in most cases, FME per se facilitates reporting. FME should also be encouraged as even those initially reluctant to be examined might be seriously injured (Paper II).
To the SAC, the fact that nearly all the most laborious cases were reported, i.e. those with many injuries to be documented, justifies the time spent on these examinations.

Performing FME irrespective of police involvement at arrival, is approved by our legal authorities, who emphasise the investigative value of proper FME documentations (17;73). Health institutions and health personnel have been more ambiguous towards routine FME due to low legal utilisation, costs (especially as long as the police compensate only for requested documentation), and the strain upon the victims (35;36;39). Several also question the evidentiary value of FME, as clear associations between FME and legal outcome are difficult to prove (8;35;36;39).
To the police, the gain of self-referral achieved by offering FME to all arriving in time constitutes 24% of all FMEs in the present police-reported cases. These are the FMEs performed ≥ 2 days prior to police involvement. In a police-dependent service, as still exists in many countries where a police request is mandatory for having the examination, such a delayed police involvement would cause a considerable loss of trace evidence as FME would be correspondingly postponed – or might not be requested at all, cf. Paper I. Thus these FMEs constitute the forensic benefit of self-referral[13]. In this study, none of these victims delayed reporting more than three months post consultation, i.e. the forensic samples remained available to the police.
Comparable information on legal gain by a self-referral service is rare. A 4.5 – 6 % gain has been indicated, but the centres' premises vary (29;43). Victims initially not considering to report, may not be offered examination (43), or the majority of victims have involved the

[13] As a methodological comment, the FME gain is a rough measure. As ten of the hesitators had already postponed their arrival at SAC for ≥ 2days, the value of the samples already was reduced, and the calculated gain too high. On the other hand, as time from assault to examination was calculated in dates, not exact hours, the limit for "critically delayed reporting" was set later after consultation than ideal, implicating that the presented gain is too low. Neither do we know how many of those contacting SAC and the police on the same day that would actually be selected for examination if the police were responsible for requesting FME.
So totally, although a rough measure, we remain comfortable that the presented gain is not exaggerated.

police prior to arrival (29). To establish the range of the gain and evaluate practices, more studies from various centres are needed.

Oppositely, 40 % of the FME-documented cases in these series are not registered with the police, "examination performed in vain", similar at the *Is* SAC (Paper I). However, non-reported cases on average have fewer injuries and require less time-consuming FME.
In total, this SAC considers the routine offer of FME justified; and also finds that many victims are consoled by the examination, given a supportive/comforting setting. This is supported in some other studies; the examination can bring about a "sense of doing something" and be empowering (150); the staff's attitude, support and training being crucial (81;148;150).
The dilemmas regarding whether FMEs are performed "in vain" may increase if attending rates increase without a corresponding increase in the fraction reported to the police, and may cause pressure for selection or for SAC to promote reporting more intensively, especially if the SAC is not reimbursed for unreported examinations.

It is an open question whether the police ought to be involved in most cases. For society it is important that the inhabitants are protected from crime and to emphasise the seriousness of crime. At the individual level, the answer is more complicated. Reporting might be seen as an act of solidarity with other victims, but as one victim stated; "Reporting didn't help *me*". This SAC has decided to facilitate reporting practically without actively advocating; decisions are left to the victims as they need to regain control (5). Reporting implies loss of control e.g. on personal information and exposure (151). Encountering the judiciary system may be associated with a negative health outcome: risks for secondary traumatisation have been shown (9;81;148;152;153) and other restorative actions are debated (9;84;151;153;154). Several methods for restorative justice are established like victim/offender mediation programs, community justice conferencing, sentencing circles and reparative probation. Such arrangements do not presently exist in Norway but have been discussed (73), and we have a compensatory law regulation administered by civil authorities. However, most of these restorative measures depend upon initial police involvement and their introduction does not eliminate the need for qualified investigation.

The present study discloses unexpectedly complex medical/legal interactions. SAC was unprepared for many police-escorted cases mistakenly assumed to be reported as well as

reported cases not identified by SAC. Neither foreseen were the many rape complainants not referred to SAC, most of them never attending SAC; some arriving by self-referral too late for FME, a few even after the investigation was closed. Withdrawals of complaint represent another unforeseen loss where SAC information remains unavailable to the police.
This attrition, obviously important to counteract, is further dealt with in the overall discussion.

Paper IV

Police utilisation of available SAC casework

Legal us of SAC-information is limited, eventually documentation was conveyed in only 35% (121/354) of all cases in these series. Paper III discloses victims' choice not to involve the police as the main limitation and comprised about half of the cases. Still, the self-referral SAC organisation renders more forensic information/samples available to the police than if examinations had to be postponed until requested by the police (Paper I, III).
But the police do not fully utilise SAC's potential, as information is requested in only 75% of the cases available to them (121/163); i.e. 84% of the FME documentation, 50% of the sets of forensic samples are analysed, 30% of the information in the non-forensic cohort, and expert evaluation of injuries and/or psychosocial consequences virtually not used at all.
Paper IV explores factors associated with use and non-use and practical contributions of SAC case-work in investigation.

Two factors are shown to exert major impact upon utilisation; police coding of the case, and time of the year for reporting. Both associations were significant in the forensic cohort and trace evidence subgroup. Correspondingly, in the non-forensic cohort medical information was collected only in cases police-classified as rape, and Paper I demonstrates that the *Dk/Fi* police mainly request FME in cases of penetrating assault.

The present study discloses police coding to be inconsistent with assault descriptions given at SAC, e.g. the rape code is not applied in all cases of forced/strongly suspected penetrative acts seeming to qualify for the code (Paper IV). Paper IV exemplifies how divergences may arise and concludes that serious cases of alleged sexual assault as a consequence risk less investigative efforts.

However, the description at SAC cannot unconditionally be considered as *the* correct version – descriptions might be incomplete, misunderstood or misleading, although false complaints seem rare[14]– but neither should the police-coding automatically be accepted as the more valid one.

Taking the uncertainties into account, the recommendation persists; the limited focus upon statutory rape should be abandoned. Later, indications for FME with trace evidence sampling have expanded in line with developments in DNA technique, e.g. analyses for saliva and epithelial cells, emphasising the need for an expanded attention. So do the issue of serial perpetrators that commit a variety of assaults (84). In our data, 6% of the identified perpetrators were responsible for more than one assault each, 10% in a later series from the Oslo police (23).

The limited efforts in cases reported at the end of the year are probably due to fiscal factors, as no plausible investigative reasons are at hand (Paper IV). Economic reasons for not requesting analysis are reported from other countries as well (155), or may be unspoken reasons for very low request rates (36;37;146).

Considering the seriousness of sexual assaults, the police should be sufficiently funded for basic investigation, and countries governed by law should be in front. Economic reforms are mandatory. As long as the forensic medical work and analyses are paid by the local requesting police, conflicts of interests and priorities ensue, where victims' rights to have their case documented may suffer, especially if the prospects of successful prosecution are scarce. In Norway, the funding of trace evidence and toxicological analyses has recently been changed into centralised models, while the local police are still charged for other requested FME documentation.

Cases where the complainant had a drug/alcohol dependency were less likely to have FME documentation requested. These persons are often less cooperative; they may be incapacitated when filing their complaint or considered less trustworthy by the police (156) Investigative efforts may also be reduced due to assumed smaller probability of prosecution (19;146), but actually, their legal situation seems not much studied. They might be compared with the

[14] At SAC the forensically correct term is thus "alleged assault", but this term is not generally used. For clinical purposes, anamnestic information is basic for examination and treatment. Even when delusions or self-inflicted injuries are suspected, victims' version is the key to further work. Directly false complaints are seldom seen at SAC and we do find most of the attending suffering. For these reasons, the term "alleged" is most often dropped when speaking of the attendees and case panorama in general.

mentally handicapped/diseased victims that more often are met with less investigative efforts, disbelief, whose complaints are more often no-crimed or discarded due to low prospects of conviction (19;38;146;147).
In these series, most handicapped victims had their medical documentation collected but other examples of insufficient investigation were seen. E.g. analyses were not performed, alleged perpetrators not interrogated, no proper expert evaluation of mental capacity requested, or access to legal counsel was withheld with the justification that perpetrators were under-aged. The handicapped are more at risk of sexual assault than the general population (1;91;132;134), so are the addicted (1;116;128), and the handling of their cases should not leave the impression that they are treated according to a different standard.
In these series, few of the cases involving addicted (1/24) or mentally disabled complainants (2/9) were closed as "no crime committed". Thus, disbelief does not seem to be the reason for reduced police efforts.

Odds for requesting analyses of victims' samples were reduced if the venue was within the perpetrators' area. Reasons can only be guessed at, as there are no studies for comparison. Perhaps these perpetrators more often admit sexual contact but claim consent, or perhaps the police assume the chances of prosecution reduced if the complainant has visited the perpetrator. Replicate studies to control the result are recommended.

Perpetrator identification is likely to influence the police's use of SAC documentation, as indicated by our interaction analyses. Wide confidence intervals prevent definite conclusions; a larger cohort might have given clearer results.
Whenever a perpetrator is named, the police have double reasons for investigation, as the person accused of a crime is entitled to have the allegation settled, and the victim's rights should be ensured. Where initial investigation brings no prospects of finding an unidentified offender, FME documentation will not make any difference vs. perpetrator; which may result in a more restricted collecting. Similar examples were seen in cases of legally non-responsible perpetrators.

However, victims should have their complaint investigated even when no suspect is found or is exempted from punishment, as the police files also constitute a fundament for decisions regarding victims' applications for governmental compensation[15].
This right to investigation irrespective of prospects of successful prosecution is applicable also in the non-forensic cohort.

When used, SAC information fulfils the intentions for investigation:
Documented injuries may support coercion, and trace evidence analyses often confirm sexual contact, identify perpetrators and link victim and perpetrator. The results demonstrate that the contributions of FME evidence ought to be evaluated by intermediate objectives and not only by end outcomes like prosecution or legal outcome.

The results also show that the use of available forensic/medical documentations can be improved.
Requests of expert evaluation regarding the examination results were gravely underused at the time, and are still far from being a routine in Norway although recommended in two governmental reports (17;73). Such evaluations are also warranted in other studies as misinterpretations may ensue without (37;157).
At the time of the study, the main indications for trace evidence analysis included potential verification of sexual contact and linking of complainant and perpetrator. Cases with unidentified perpetrator were considered useless to analyse unless having some suspect for comparison as there were no DNA registers for comparison. However, analysis could have been performed and stored; a serial perpetrator caught in 2008 was thus linked to a 1998 case and seven later cases (police information to SAC). Today we expect more samples to be analysed, as DNA profiles also can be checked against DNA registers, making possible identification of more perpetrators and delinquents enrolled.
Circumstantial medical evidence like documentation of demeanour and post-assault consequences was not requested routinely, although relevant to both penal and compensatory justice. Norwegian legal authorities recommend more use of such supportive evidence (17;73), and we have the impression that presently more information is requested, especially by the lawyers assisting complainants. The quality of documentation should be further

[15] Norway has, like in many other European countries, a separate legal regulation of economic compensation to victims of violence, administrated by civil authorities, where also victims in non- prosecuted cases may apply.

developed. There are no national standards regarding presentation and evaluation, although recommendations exist in international literature (158;159). Evaluation is necessary to contradict the expectations on "true victims' behaviour" prevailing at many levels within the judiciary system (145;147;160;161), and for providing proper assessment of consequences and cause.
Toxicological testing is another important aspect of FME, but analysis was not routine at the time of this study and such results were not included.

General discussion – attrition and early/late disclosure of assault

All four papers have one issue in common; the attrition from assault to SAC and police, including the barriers victims have to overcome in order to attend/report and the selections for action displayed by the services. The results unveil profound differences between victims and cases according to preference for early or late disclosure of the assault. All these dimensions have an impact upon legal outcome.
The first paper demonstrates marked inter-centre variations in rates of police-reported cases, indicating diverging thresholds for attendance and for request of FME. The following papers explore the attrition at different levels of the process from assault to SAC and police.
As it appears, victims' decisions mainly determine the initial steps when approaching health and judiciary services, while attrition further in the process towards legal outcome becomes increasingly defined by the services' preferences and selections. This is outlined in the following, with the perspective of what can be addressed and what may have to be accepted.

Victim-related attrition

Victim-related attrition is displayed in the initial process by

- only a minority of assaulted attending SAC/ reporting to the police
- victims postponing to approach SAC/police
- victims recoiling from FME and from follow-up
- victims withdrawing complaints and lack of cooperation in investigation

Research regarding victims' post-assault decision-making contributes to understand this attrition and discloses concordant reasons for non-attendance and non-reporting, recoiling and

late approach. Reasons reside in stereotypes (66;67;71;72;83), failure to recognise the incrimination (7;28;66;72;162), non-awareness of SAC and SAC target groups (72) or not knowing how to report (119), negative expectations to police/judiciary system/public services (28;80;94;146), lack of social support and attitudes (97;162). A series of additionally given reasons might be regarded as trauma reactions but seem not appropriately identified: Confusion (146;148) and impaired memory (146) are frequently signs of disarrayed cognition; fear (80;146;148); while shame/guilt (80;146), embarrassment, not wanting to think about painful experiences nor others to be informed (28;80;94;146;148;163) are common expressions of avoidance.
Several of the abovementioned reasons are possible to address; e.g. by information and education. Trauma reactions are different; inherent, instinctive, and may have major impact on victims' post-assault behaviour; and the trauma aspects have been insufficiently considered by society. Public services often operate in an expectation that victims think and act rationally, without taking into account the altered cognition, disarrayed memory function and the drive to reduce emotional pain by avoidance. However, the majority of assaulted can neither be expected to become early attendees nor early reporters, the characteristics of trauma reactions being inhibitory. In order to reduce victim-related attrition, strategies on both information and trauma are required.

Public discussions providing facts may counteract the stereotypes, enhance the common awareness of incrimination and social support given to the victims (28), and generate better understanding of trauma. Similar issues ought to be mandatory curriculum for involved professionals.
At the international arena, continued focus on human rights for women and children is persistently important, and organisations like UN, WHO, Amnesty, and rape crisis networks (10;13;14;164;165) are heavily engaged. Clinical research documenting the consequences of abuse and civil and legal authorities showing concern may increase the pressure for change.

SACs may reduce attrition related to attending by public information on SAC's existence and target groups as well as the benefits of help-seeking (72). The police may contribute by systematic referrals to the SACs; in this study, the number of victims receiving SAC service could have increased by 26% if all those reporting rape in Oslo had been referred.
However, the most effective measure to assist more victims is probably to accept and promote late arrivals at SACs. So far, communities, SACs and the police have focused the medico-

legal aspects and the acute services when considering efforts to improve services for sexually assaulted. Several SACs operate with a time limit for admission according to possibilities for successful FME (27;42;102); but as shown, admission of late arrivals benefits the young and those exposed to common non-stereotypic assaults (Paper II). Inclusion of late arrivals should not be controversial, considering victims' long-term risks, their psychosocial vulnerability and their morbidity.

Victims' withdrawal from examination and follow-up at SAC as well as with the police is probably often a feature of avoidance behaviour, on which the professionals' conduct has a strong impact. Previous studies have emphasised how negative attitudes like scepticism, critique and neglect may cause secondary traumatisation and withdrawals (81;148;153;162). Oppositely, respectful attitudes may empower victims (4;166) and also provide better statements (7). Principles from trauma intervention may supply strategies to reduce the attrition; like endeavouring to establish trust during the first encounter (72) as well as an active outreach to avoid drop-outs (29;72;167).

Regarding the victim-related attrition from assault to police; public reputation of the police/judiciary system is of concern as victims lacking faith in the police tend not to report (28;88;94;146), and oppositely, positive expectations may facilitate reporting as victims want the perpetrator punished (28;146;148).

However, the list of reasons *contra* reporting seems longer than the *pro* list; and non-reporting and withdrawals are responsible for more than half of the attrition from SAC to police in these series. Fifty percent of the victims seen at this SAC are not registered with the police, and 13% of all police-registered complaints are withdrawn. Among all approaching the police (i.e. either being registered with a complaint and/or arriving by police escort), 25% recoil, 20% after the first encounter with the police (Paper III). This considerable attrition underscores the importance of the first encounter (72;168); and routines for systematic registration and proactive follow-up might be useful[16].

Facilitating reporting also includes acceptance of delayed reports and contradiction of the myth that "real rapes are reported immediately", a myth insinuating that delayed reports are less reliable (19;147;160). High fractions of late complaints should rather be considered a sign

[16] Actually, the police did try to get in touch with some of those withdrawing their complaint early, without getting response. Most victims withdrawing their complaint at a later stage informed the police of their reasons, e.g. the process to strenuous or the impact on relation to perpetrator. The police files in cases where victim/police interaction proceeded were not informative of whether victims had considered retiring.

of reduced barriers to report; these cases though remain more difficult to prove due to lack of traditional evidence like FME, crime scene investigation and witness statements[17].

It is relevant to explore whether the present case- and attrition-patterns among police-reported cases from a SAC are representative for police-based series.
Our victim/case profiles seem similar to rapes reported in Oslo[18], except for the police seeing more partner assaults and relatively fewer assaults by acquaintances (23;76;77). Withdrawal of complaints is not quantified in Norwegian police statistics on rape, being 15 – 29% in UK (146), while 11% of Swedish victims are described as "non-cooperative" (25), confirming a considerable problem.
Delayed reports are even more common with the Norwegian police than at SAC; 50% of the rape reports are presented within five days post-assault and 25 – 29% later than a month (23;76-78). However, at SAC, hesitation is noticeably less than average among early arriving victims; and higher than average among the late attending. At the international level, delayed reports seem more common in Norway. In Sweden and Britain, 70 – 95% are reported within a week (25;146), in a Danish study 71% notified the police within 24hrs (40). Further studies on delayed reports from more countries might clarify whether high fractions of delay are associated with a lower threshold to report.

Police-related attrition

Attrition regarding the use of available medical information is controlled by the police, and a similar selection for use is likely to be present in more precincts and countries, but little is known of the extent and the influencing factors.
In this study, medicolegal statements were issued in 84% of the reported, available and examined cases (Paper IV). In Sweden, statements were issued in 50% of the reported rape cases presenting to hospital/SAC in time for FME (25;85), medical statements being present in 24% of all rape files in a police series (25). The Swedish studies do not specify whether

[17] However, if victims have attended a SAC at an earlier stage, FME-related information might still be available. In these series, 25% of all reporting hesitated for more than a week; 44% of these had undergone examination.

[18] The series are similar regarding victims' age, use of violence/coercion and stranger perpetrators.

FME actually was performed or information was formally available to the police, but irrespective these details missing, use of medicolegal evidence seems suboptimal.
In cases where no FME is feasible, medical/counselling statements might still constitute valuable circumstantial evidence by documenting consequences and explaining reasons for delayed disclosure, but are requested at a much lower rate.
The shown utilisation practices in our non-forensic cohort might be representative for a majority of reported sexual assault cases. As 40 – 50% of all reporting rape victims do not seek medical assistance, and many report too late to be referred for FME (23;77). We must expect that the majority remains without FME, as already demonstrated in Sweden (25). The prospects of overcoming hesitation seem sparse (cf. the discussion of victim-related attrition). Still, most efforts to improve the investigation focus on situations where FME is feasible (17;73). Similarly, there is a vast number of publications trying to establish the impact of forensic medical evidence, c.f. (8;169).

As discussed in paper IV, important medical information might be lost by the police selection. Although there are a number of rationales in favour of a selection; e.g. in cases assumed unfounded, false or without prospects of prosecution (19;147); the basis for decision can be questioned. Throughout the processes towards legal outcome, many decisions taken by the police and attorneys are based on discretion, often involving evaluation of victim's credibility (17;145;147;160) – a discretion often criticised for being influenced by myths and stereotypes (19;145;147;160;161;163).
Systematic collection of available evidence including medical information, would improve the fundaments for decision-making and the investigation might better withstand critique. Victims righteously expect that available information is collected before any closing decisions are taken. Maximal collection of SAC information might not enhance numbers of prosecutions, but cases might be more difficult to no-crime erroneously, and applications for civil compensation would be better founded.

Suspicion of unfounded or false complaints deserves a particular comment, as police estimates of the frequency of false rape reports diverge widely, 10 – 50%, or even higher (7;146;147). High guesstimates may contribute to undue scepticism against complainants (7;147;160); formal research on the phenomenon being limited (7;170).
In a British study, 8% of the police-reported cases are designated false by the police, in which persons 16 - 25 yrs, persons with mental disability and persons that previously have reported

assault are over-represented (146). The authors' revised estimates of false complaints amount to 2 – 3%. A recent Danish study concludes that 7% of all police-reported rapes are false complaints (170). True and false assaults are described as rather similar[19], whereas the false complainers seem more vulnerable and in need of attention/care, 39 – 57 % did not intend to notify the police, only 29 % did so themselves. In Oslo, the police find 4% of the complaints evidently unfounded (23). At the Oslo SAC, we rarely encounter obviously false stories, perhaps 1 – 2 per year. There are a few delusional stories, self-inflicted injuries and occasionally some cover-up stories. These cases need assessment, but seldom proceed to the police.

Of the total work load at SAC in the present studies, SAC documentation from 35% of all cases and 49% of the FME documentation eventually came into use by police. Lately, the fractions of collected documentations seem to have increased, but are still low[20]. Low usage rates may discourage SAC staff in their forensic tasks, but contributing to victims' recovery remains meaningful. Making a difference regarding legal outcome is far more difficult, and to the police, efforts spent on cases never proceeding to court may cause dejection, perhaps also facilitate rape myth acceptance and diminution of cases (19;24). Research on compensatory justice outcomes might expand the meaning by disclosing other arenas where police investigation matters.

Attrition and legal outcome

Attrition as described eventually has consequences for legal outcome, and thus represents confounders in studies on legal outcome in SAC cases.
As shown in Table 2, FMEs seem to make a difference as more perpetrators are identified, more cases prosecuted and fewer cases no-crimed if FME information is present in the police files. However, the fact that more of these cases are reported shortly after the assault might be as important by favouring other investigation like crime scene investigations, as well as more witnesses likely to be available. Due to the described selection for use of FME-information, there is also a preponderance of cases coded as rape, with documented injuries and identified

[19] Rape by blitz attack and serious threats occurred more commonly among the false complaints, while present/previous intimate partners were seldom falsely accused of rape.
[20] In 2008, statements were requested from Oslo SAC in 131/296 (44%) cases (information collected by author, further details not feasible).

perpetrators, as the police more often collect information in such cases (Paper IV). Hence, more evidence is available in this cohort, which benefits prosecution.
The second cohort is less favourable regarding evidence, and cases end in this cohort as a consequence of victim/police attrition. Many victims have not undergone FME as they have been reluctant or arrived too late, many also delay their police involvement, and some victims do not give consent to release information. Those postponing police notification also forfeit the opportunity of valuable crime scene investigation. The police contribute to the cohort by not referring victims to SAC in time for FME, and by not collecting available FME documentation. In fact, police-related attrition surrenders considerable potential. Totally in the second cohort, FME was available in one third of the cases, other SAC information available in nearly 80%; yet medical/supportive information was collected in only one fifth of the cases, and none of the FMEs.
Regarding legal outcome; the all-over results of these studies are similar to the national statistics on police-reported rape; i.e. 18% convictions (78). However, the fraction of prosecution/conviction exceeds the national average in cases where FME is present in police files, and is considerably lower in cases where FME is absent. In addition, our case panorama is not restricted to rape.

Thus, a kind of Matthew effect[21] seems to prevail: in some cases most post-assault actions are favourable, such as early attending, early reporting, case coded as rape, FME performed, FME collected, crime scene examination, supportive evidence and identification of the perpetrator. These cases naturally have a better legal prognosis but constitute only a minority, even if some more might be included given systematic use of SAC evidence. These victims are exceptional by enduring assault, forensic medical examination and police interrogation, all within 24 – 48 hours, and many in a traumatised state. There are good reasons to recognise the strain and perhaps to question the healthiness of such a race.
So far society's efforts to improve services for sexually assaulted have mainly focused on this minority, unsuccessfully hoping for more victims to accept the race.

Then, what about the majority of victims that hesitate to come forward, or where other case characteristics/post-assault actions are less favourable? If they report, they will be included in the hard-to-prove cohort, and risk less investigative efforts (19;147) like not having the medical information collected.

[21] Matt 13:12

Such factors may contribute to the increased reporting rates without a corresponding increase in conviction rates (22); more delayed reports; more cases without FME (visiting SAC too late or not at all). Less physically violent assaults tribute to the same tendency (24). Due to strict requirements for conviction inherent in modern jurisprudence, the prospects of increasing conviction rates will remain limited in such cases. Thus it appears that some of the development has to be accepted as a consequence of reduced thresholds for reporting. When Norway has been criticized by CEDAW for low conviction rates and low fractions of clarified legal outcome in rape cases, our relatively large proportion of late reports should be borne in mind (24).

However, all victims should be entitled to serious assessment of their case and to have their complaint investigated as an event of crime, irrespective of prospects of convicting a perpetrator, as the police files constitute a fundament for compensatory claims and may be the gateway to other restorative actions (9;84;154). For the same reasons circumstantial evidence like documentation of appearance and post-assault consequences should be used systematically and be of higher standard than today.

This perspective is pragmatic as opposed to the public claims to increase conviction rates, but should not discourage victims from pressing charges. The complaint should be ascribed a value in itself that may counteract further assaults, and legal success should not merely be measured in conviction rates; but also by evaluating fractions that achieve restorative compensation.

The discussions of legal proceedings and legal outcome in sexual assault cases may, however, serve to maintain a limited focus regarding appropriate services for sexually assaulted.

To the victims, a well-functioning SAC is only the beginning. This beginning should be available to all assaulted; not only the acutely arriving minority; and appropriate follow-up/ referral services should be at hand. This way the authorities might expand their response and prioritise what is most important apart from prevention: facilities for restoring those victimised.

Strengths and limitations

Methodology

The main strengths are:

1. The use of SAC by victims and the legal system can be evaluated by combining descriptive information from catchment population, SAC, and police.
2. The retrospective design made it possible to combine information from SAC and corresponding police files even in cases where registration with police and completion of the legal process occurred a long time (up to several years) after the SAC consultation. As the police files were unavailable for external review until the cases were legally complete, the search had to be performed several years back in order to ensure completeness. This interval, the retrospective design and generous assistance from the police statistician made one single main search sufficient for identifying all police-registered cases, their legal outcome and allowed retrieval of all but 6 police files for review, including preliminary reports.
3. Data from the Oslo SAC and corresponding police files were collected by one person, author HN.
4. The Nordic countries, from which this study originates, are beneficial for comparisons. They are closely interwoven in history and development, which reduces bias from cultural differences. Their health and welfare provisions are on level, and they may provide much of the same background information e.g. on prevalences on sexual assault and domestic violence.

The main weaknesses are:

1. In a retrospective design, quality of casework documentation is variable as questions may not have been asked, answered or documented, especially if regarded clinically irrelevant at the moment. However, in a SAC setting, several frame questions are standard.
2. For the inter-centre comparison, each author was responsible for collecting the data at her centre; the variables were conjointly discussed, but no inter-rater reliability tests were performed.

Sample

The main strengths are:

1. The four samples in the comparative section are a unique quartet as they originate in cities that are culturally comparable and at the time equipped with differently organised services for sexually assaulted, thus allowing a comparison between the self-referral model vs. the police-dependent model.
2. The sample from Oslo SAC is unique in comprising all consecutive cases from a self-referral SAC, including reliable information of police-registered cases, case logistics from assault to SAC and police, police use of SAC-based information and legal outcome. This single centre serves a single police precinct, and the study also provides information on actually occurring assaults and police statistics from this precinct.
3. The study gives a broad overview of victims' and legal authorities' use of the SAC services. We are also able to compare the SAC services to the traditional police-dependent services at forensic institutes.

The main weaknesses are:

1. In the comparison, the Copenhagen data were collected from a previous study and we do not know whether this FMI saw other complainants of sexual assault than the included rapes/attempts, e.g. suspected assaults.
2. The basic series from Oslo now date several years back and some present trends may be different, e.g. more visitors seen at SAC and more forensic analyses being performed, but there are spare signs of radical changes. Still, less than half of the medical documentations are conveyed to the police. Our main results and the demonstration of attrition remain valid and relevant as a baseline and a model.
3. The numbers of reported cases in the late presenting cohort are low, and therefore the statistical power is weak.
4. A few cases were linked by victims or perpetrators; all cases were included as the casework has been the focus of the study. We consider the inclusions unlikely to disturb the statistical analyses.
5. Restricting legal outcome to cases classified as rape by the police would allow direct comparisons to national statistics. However, the inconsequent coding and the undue differences regarding investigation depending on code had to be shown.

6. The results in these series are representative for a Nordic help-seeking population. The situation for the not-seen majority of assaulted, as well as the Non-Western population, so far remains uninvestigated.

Further research

Studies presenting case profiles from SACs and FMIs should include information on attending rates or population at risk, in order to facilitate comparisons.
There is a lack of studies focusing on victims' vulnerability and follow-up studies addressing morbidity and mortality.
Replicate studies on attending and police-reporting practices are relevant in order to monitor trends, and police statistics discriminating early and late reported cases would be interesting.
A future study including all cases from SAC and those coded as rape/serious assault from the police and from The Norwegian Criminal Injuries Compensation Authority would allow for a more complete overview of legal use of medical information in sexual assault cases.
The police-related attrition SAC – police should be further studied.
After implementation of recent and recommended governmental reforms (73), replicate studies are required e.g. evaluating the use of supportive evidence and interpretative medical expert statements**.**
As the legal focus turns towards circumstantial/supportive evidence; better descriptions and knowledge of victims' status at first presentation are needed, as well as information on long-term consequences, for more reliable interpretation.
Research regarding influence of medical information on legal outcome ought to include other key investigative information like crime scene examinations, witness testimonies and various types of attrition.
A replication study upon forensic sample analyses is relevant as forensic laboratory technology has advanced, and analyses of forensic samples are applicable in more cases as the national DNA register has been established.
We also need more studies on persistence of spermatozoa and DNA in body orifices and possibilities for laboratory analyses in order to achieve a consensus of time limitations for forensic sampling.
Toxicological analyses taken as routine at all SAC-performed FMEs would bring valuable background information of the association between alcohol/drugs and sexual assault.

CONCLUSION

Self-referral SACs prove more beneficial than police-dependent FMI services by assisting more victims and providing more FMEs. SACs seem particularly beneficial for the young most at risk and for those assaulted by a known perpetrator.

At SAC, early and late presenting cases differ in several aspects; the youngest and those exposed to ”common non-stereotypic assaults” postpone their arrival. Victims disclose a variety of vulnerabilities and needs, and multidisciplinary services are requested also by those late attending.

The attrition from assault to SAC and police is huge, we estimate that only 5 – 10% of the actually assaulted approach these services. Victims' decisions and the attitudes of significant others are important for the initial contact, but the services may facilitate the approach. Acceptance of delayed arrivals is considered important to reach the majority of assaulted. Once contact is established, the services have the opportunity to encourage or discourage further contact, and proactive follow-up is recommended. At the later stages towards legal outcome, the police become a determinant factor in attrition.

At the Oslo SAC, half of the cases are registered with the police. Predictors of police involvement were considered insufficient for selective performance of FME. When FME is performed as routine at SAC, 40% of the FMEs remains unused, “in vain“, as these cases are not subsequently reported to the police. On the other hand, 24% of the reported FMEs are a gain to the police, as these examinations would have lost quality if postponed until a police request was available.

Yet, the police do not fully utilise the potential of available SAC information. Most use is made of the information in cases classified as rape and registered during the first eight months of the year, the latter probably related to fiscal factors. The strong focus on rape-classified cases should be abandoned as the classification process seems inconsistent. Other recommended improvements would be systematic collection of medical information, more use of expert evaluations of injuries and of psychosocial consequences, and improved economic funding for forensic work.

Regarding legal outcome, 18% of the cases in these series were taken to court, similar to the Norwegian average. However, a Matthew effect seems to prevail for those early attending and reporting as most post-assault actions are favourable for investigation and conviction in these

cases. However, these cases represent a minority. Up until now, the society's efforts to improve services for the sexually assaulted have mainly been directed towards this minority. Victims hesitating to attend/report have less prospects of a favourable legal outcome, as these cases are often more difficult to investigate. Where no FME is available, other medical information is collected to a lesser extent. These late arriving victims are probably more representative of the majority of the assaulted and deserve more attention both regarding treatment and investigation. Measuring successful legal outcome in conviction rates alone should be abandoned; reduced rates of undue no-criming might be an additional valid outcome, and other restorative actions sought. At SAC, the benefit should be measured in terms of victims' outcome, not legal outcome – without renouncing on the quality of the FME.

Reference List

1. Acierno R, Resnick HS, Kilpatrick DG. Health impact of interpersonal violence. 1: prevalence rates, case identification, and risk factors for sexual assault, physical assault, and domestic violence in men and women. Behav Med. 1997;23:53-64.

2. Resnick HS, Acierno R, Kilpatrick DG. Health impact of interpersonal violence. 2: medical and mental health outcomes. Behav Med. 1997;23:65-78.

3. Kilpatrick DG, Resnick HS, Acierno R. Health impact of interpersonal violence. 3: implications for clinical practice and public policy. Behav Med. 1997;23:79-85.

4. Kimerling R, Calhoun KS. Somatic symptoms, social support, and treatment seeking among sexual assault victims. J Consult Clin Psychol. 1994;62:333-40.

5. Dahl S. Rape: a hazard to health. Oslo: Scandinavian University Press, 1993.

6. Ullman SE. Social support and recovery from sexual assault: a review. Aggress Violent Behav. 1999;4:343-58.

7. Kelly L. Routes to (in)justice: a research review on the reporting, investigation and prosecution of rape cases. London: HM Crown Prosecution Service Inspectorate, Great Britain, 2002.

8. Du Mont J, White D. The uses and impacts of medico-legal evidence in sexual assault cases: a global review. Geneva: Sexual Violence Research Initiative, World Health Organization, 2007.

9. Koss M, Achilles M. Restorative justice responses to sexual assault. VAWnet: National Online Resource Center on Violence Against Women, Applied Research Forum, 2008 [cited 7-4-2009]. Available from: URL: http://new.vawnet.org/Assoc_Files_VAWnet/AR_RestorativeJustice.pdf

10. Sexual Violence Research Initiative (SVRI), 2009 [cited 27-3-2009]. Available from: URL: http://www.svri.org/index.htm

11. Gottschall J. Explaining wartime rape. J Sex Res. 2004;41:129-36.

12. Sexual violence. World Health Organization, 2009 [cited 27-3-2009]. Available from: URL: http://www.who.int/gender/violence/sexual_violence/en/index.html

13. Stop violence against women. Amnesty International, 2009 [cited 27-3-2009]. Available from: URL: http://www.amnesty.org/en/campaigns/stop-violence-against-women

14. Convention on the elimination of all forms of discrimination against women. United Nations, 2009 [cited 27-3-2009]. Available from: URL: http://www.un.org/womenwatch/daw/cedaw/index.html

15. International Covenant on Civil and Political Rights. United Nations, 1966 [cited 7-4-2009]. Available from: URL: http://www.un.org/millennium/law/iv-4.htm

16. UN Convention on justice and support for victims of crime and abuse of power. Tilburg University, 2006 [cited 7-4-2009]. Available from: URL: http://www.tilburguniversity.nl/intervict/undeclaration/convention.pdf

17. Soknes B, Nielsen SS, Sundet K, Nilssen SW, Davik T. En undersøkelse av kvaliteten på påtalevedtak i voldtektssaker som har endt med frifinnelse m.v [Quality in deciding rape charges] (English abstract not available). (Riksadvokatens utredningsgrupper - rapport nr. 1/2007). Oslo: Riksadvokaten [The Director of Public Prosecutions], 2007.

18. Kaasin J. Statens forpliktelser etter EMK artikkel 3 og 8 når privatpersoner utøver seksuell vold mot kvinner [Governmental responsibility according to art. 3 and 8 i European Human Rights Convention] (English abstract not available). Tidsskr Rettsvitensk. 2006;119:582-618.

19. Laudrup C, Rahbæk H. Var det voldtægt?: en undersøgelse af menneskerettigheder og voldtægtssager i Danmark [Rape?: human rights and police-reported rape] (English abstract available). Copenhagen: Rape Trauma Service, Rigshospitalet, 2006.

20. Guidelines for medico-legal care for victims of sexual violence. World Health Organization, 2003 [cited 18-4-2007]. Available from: URL: http://whqlibdoc.who.int/publications/2004/924154628X.pdf

21. Wijma B, Schei B, Swahnberg K, Hilden M, Offerdal K, Pikarinen U et al. Emotional, physical, and sexual abuse in patients visiting gynaecology clinics: a Nordic cross-sectional study. Lancet. 2003;361:2107-13.

22. Regan L, Kelly L. Rape: still a forgotten issue?: briefing document for strenghtening the linkages: consolidating the European Networking Project. London: London Metropolitan University, Child and Women Abuse Studies Unit, 2003.

23. Grytdal V, Meland P. Voldtekt i Oslo 2007: gjennomgang av sentrale data fra anmeldte voldtekter ved Oslo politidistrikt [Police-reported rape in Oslo 2007] (English abstract not available). Oslo: Oslo politidistrikt [Oslo police district], 2008.

24. Hennum R. Den rettslige behandlingen av voldtekt: hvorfor har Norge fått kritikk fra FN? [Rape in Norwegian jurisprudence: why is Norway critizied by UN?] (English abstract not available). Materialisten. 2004;32:31-40.

25. Grevholm E, Nilsson L, Carlstedt M. Våldtäkt: en kartläggning av polisanmälda våldtäkter [Police-reported rape] (English abstract available). Stockholm: Brottsförebyggande rådet [Swedish National Council for Crime Prevention], 2005.

26. Aebi MF. European sourcebook of crime and criminals justice statistics - 2006. 3rd ed. Meppel: Boom Juridische uitgevers, 2006.

27. Kelly L. Promising practices addressing sexual violence. UN Division for the Advancement of Women, 2005 [cited 7-4-2009]. Available from: URL: http://www.un.org/womenwatch/daw/egm/vaw-gp-2005/docs/experts/kelly.sexualviolence.pdf

28. Kilpatrick D, Resnick H, Ruggiero K, Conoscenti LM, McCauley J. Drug-facilitated, incapacitated, and forcible rape: a national study. National Criminal Justice Reference

Service, 2007 [cited 7-4-2009]. Available from: URL: http://www.ncjrs.gov/pdffiles1/nij/grants/219181.pdf

29. Lovett J, Regan L, Kelly L. Sexual assault referral centres: developing good practice and maximising potentials. London: Home Office. Research, Development and Statistics Directorate, 2004.

30. Bang L. Et helsetilbuds virkning på anmeldelse og domfældelse af voldtægtssager [The influence of a sexual assault health service upon police reporting and legal outcome] (English abstract not available). Nord Tidsskr Krim Vidensk. 1992;79:1-22.

31. Schei B, Muus KM, Moen MH. Medisinske og rettslige aspekter av voldtekt: henvendelser til voldtektsteamet ved Regionsykehuset i Trondheim i perioden 1989-92 [Medical and legal aspects of rape: referrals to a team for care of rape victims at the regional hospital in Trondheim during the period 1989-1992] (English abstract available). Tidsskr Nor Laegeforen. 1995;115:30-3.

32. Helweg-Larsen K. The value of the medico-legal examination in sexual offences. Forensic Sci Int. 1985;27:145-55.

33. Penttila A, Karhumen PJ. Medicolegal findings among rape victims. Med Law. 1990;9:725-37.

34. Rambow B, Adkinson C, Frost TH, Peterson GF. Female sexual assault: medical and legal implications. Ann Emerg Med. 1992;21:727-31.

35. McGregor MJ, Le G, Marion SA, Wiebe E. Examination for sexual assault: is the documentation of physical injury associated with the laying of charges?: a retrospective cohort study. CMAJ. 1999;160:1565-9.

36. McGregor MJ, Du MJ, Myhr TL. Sexual assault forensic medical examination: is evidence related to successful prosecution? Ann Emerg Med. 2002;39:639-47.

37. Gray-Eurom K, Seaberg DC, Wears RL. The prosecution of sexual assault cases: correlation with forensic evidence. Ann Emerg Med. 2002;39:39-46.

38. Du Mont J, Myhr T. So few convictions: the role of client-related characteristics in the legal processing of sexual assaults. Violence Against Women. 2000;6:1109-36.

39. Du Mont J, Parnis D. Sexual assault and legal resolution: querying the medical collection of forensic evidence. Med Law. 2000;19:779-92.

40. Ingemann-Hansen O, Brink O, Sabroe S, Sorensen V, Charles AV. Legal aspects of sexual violence: does forensic evidence make a difference? Forensic Sci Int. 2008;180:98-104.

41. McGregor MJ, Wiebe E, Marion SA, Livingstone C. Why don't more women report sexual assault to the police? CMAJ. 2000;162:659-60.

42. Schei B, Sidenius K, Lundvall L, Ottesen GL. Adult victims of sexual assault: acute medical response and police reporting among women consulting a center for victims of sexual assault. Acta Obstet Gynecol Scand. 2003;82:750-5.

43. Ledray LE, Kraft J. Evidentiary examination without a police report: should it be done?: are delayed reporters and nonreporters unique? J Emerg Nurs. 2001;27:396-400.

44. Worm AM, Johansen MS, Nielsen NH. Seksuelle overgreb bedømt ud fra retslægelige undersøgelser [Sexual abuse assessed by forensic examinations] (English abstract available). Ugeskr Laeger. 1997;160:41-4.

45. Bang L. Rape victims: assaults, injuries and treatment at a medical rape trauma service at Oslo Emergency Hospital. Scand J Prim Health Care. 1993;11:15-20.

46. Haugen K, Slungard A, Schei B. Seksuelle overgrep mot kvinner: skademønster og relasjon mellom offer og overgriper [Sexual assault against women: injury pattern and victim-perpetrator relationship] (English abstract available). Tidsskr Nor Laegeforen. 2005;125:3424-7.

47. Overgrepsmottaket Oslo Legevakt: årsrapporter [Oslo Sexual Assault Centre: annual reports] 1990, 1997, 1998, 2000, 2001, 2002, 2003, 2004, 2007, 2008 (English abstract not available). Oslo: Oslo Sexual assault Service, Emergency Medical Agency, 2008.

48. Bottomley CP, Sadler T, Welch J. Integrated clinical service for sexual assault victims in a genitourinary setting. Sex Transm Infect. 1999;75:116-9.

49. Kerr E, Cottee C, Chowdhury R, Jawad R, Welch J. The Haven: a pilot referral centre in London for cases of serious sexual assault. BJOG. 2003;110:267-71.

50. Tintinalli JE, Hoelzer M. Clinical findings and legal resolution in sexual assault. Ann Emerg Med. 1985;14:447-53.

51. Riggs N, Houry D, Long G, Markovchick V, Feldhaus KM. Analysis of 1,076 cases of sexual assault. Ann Emerg Med. 2000;35:358-62.

52. Sugar NF, Fine DN, Eckert LO. Physical injury after sexual assault: findings of a large case series. Am J Obstet Gynecol. 2004;190:71-6.

53. Read KM, Kufera JA, Jackson MC, Dischinger PC. Population-based study of police-reported sexual assault in Baltimore, Maryland. Am J Emerg Med. 2005;23:273-8.

54. Pape H, Stefansen K. Den skjulte volden?: en undersøkelse av Oslobefolkningens utsatthet for trusler, vold og seksuelle overgrep [The hidden violence?: exposure of violence and sexual assault in the Oslo population] (English abstract available). Oslo: Nasjonalt kunnskapssenter om vold og traumatisk stress (Norwegian centre for Violence and Traumatic Stress studies), 2004.

55. Jones JS, Rossman L, Wynn BN, Dunnuck C, Schwartz N. Comparative analysis of adult versus adolescent sexual assault: epidemiology and patterns of anogenital injury. Acad Emerg Med. 2003;10:872-7.

56. Jones JS, Wynn BN, Kroeze B, Dunnuck C, Rossman L. Comparison of sexual assaults by strangers versus known assailants in a community-based population. Am J Emerg Med. 2004;22:454-9.

57. Slaughter L, Brown CR, Crowley S, Peck R. Patterns of genital injury in female sexual assault victims. Am J Obstet Gynecol. 1997;176:609-16.

58. Adams JA, Girardin B, Faugno D. Adolescent sexual assault: documentation of acute injuries using photo-colposcopy. J Pediatr Adolesc Gynecol. 2001;14:175-80.

59. Jones JS, Rossman L, Hartman M, Alexander CC. Anogenital injuries in adolescents after consensual sexual intercourse. Acad Emerg Med. 2003;10:1378-83.

60. Ackerman DR, Sugar NF, Fine DN, Eckert LO. Sexual assault victims: factors associated with follow-up care. Am J Obstet Gynecol. 2006;194:1653-9.

61. Jones JS, Alexander C, Wynn BN, Rossman L, Dunnuck C. Why women don't report sexual assault to the police: the influence of psychosocial variables and traumatic injury. J Emerg Med. 2009;36:417-24.

62. Schei B, Haaland T, Clausen SE. Vold i parforhold - ulike perspektiver: resultater fra den første landsdekkende undersøkelsen i Norge [Violent relationships: the first national survey upon domestic violence in Norway] (English abstract available). Oslo: Norsk institutt for by- og regionforskning [Norwegian Institute for Urban and Regional Research], 2005.

63. Heiskanen M, Piispa M. Faith, hope, battering: a survey of men's violence against women in Finland. Helsinki: Statistikcentralen, Finland [Official Statistics of Finland], 1998.

64. Lundgren E. Captured queen: men's violence against women in "equal" Sweden: a prevalence study. Umeå: Brottsoffermyndigheten [The Crime Victim Compensation and Support Authority], 2002.

65. Balvig F, Kyvsgaard B. Vold og overgreb mod kvinder: dansk rapport vedrørende deltagelse i International Violence Against Women Survey (IVAWS) [Violence against women: a Danish report for IVAWS] (English abstract not available). Copenhagen: Justitsministeriet [The Danish Ministry of Justice], 2006.

66. Myhill A, Allen J. Rape and sexual assault of women: the extent and nature of the problem: findings from the British Crime Survey. London: Home Office. Research, Development and Statistics Directorate, 2002.

67. Walby S, Allen J. Domestic violence, sexual assault and stalking: findings from the British Crime Survey. London: Home Office. Research, Development and Statistics Directorate, 2004.

68. Koss MP. Detecting the scope of rape: a review of prevalence research methods. J Interpers Violence. 1993;8:198-222.

69. Dussich JPJ. Decisions not to report sexual assault: a comparative study among women living in Japan who are Japanese, Korean, Chinese, and English-speaking. Int J Offender Ther Comp Criminol. 2001;45:278-301.

70. Lee J, Pomeroy EC, Yoo SK, Rheinboldt KT. Attitudes toward rape: a comparison between Asian and Caucasian college students. Violence Against Women. 2005;11:177-96.

71. Frese B, Moya M, Megias JL. Social perception of rape: how rape myth acceptance modulates the influence of situational factors. J Interpers Violence. 2004;19:143-61.

72. Fladby B. Et sinnsykt stort kjempeskille i livet: utvikling av tilbud til personer utsatt for seksuelle overgrep: en behovs-og tiltaksanalyse [A wild change in life: analysing the acute needs of sexually violated and suggestions for improved services] (English abstract not available). Oslo: Sosial vakttjeneste, Legevakten [Emergency Medical Agency], 2004.

73. Fra ord til handling: bekjempelse av voldtekt krever handling (NOU 2008:4) [Rape: from words to action (Official Norwegian Reports. 2008:4)] (English abstract not available). Oslo: Statens forvaltningstjeneste [Government Administration Services], 2008.

74. Grossin C, Sibille I, Lorin de la Grandmaison G, Banasr A, Brion F, Durigon M. Analysis of 418 cases of sexual assault. Forensic Sci Int. 2003;131:125-30.

75. Saint-Martin P, Bouyssy M, O'Byrne P. Analysis of 756 cases of sexual assault in Tours (France): medico-legal findings and judicial outcomes. Med Sci Law. 2007;47:315-24.

76. Saetre M, Grytdal V. Voldtekt i Oslo 2001: gjennomgang av sentrale data fra anmeldte voldtekter ved Oslo politidistrikt [Rape in Oslo 2001] (English abstract not available). Oslo: Oslo politidistrikt (Oslo Police District), 2002.

77. Saetre M, Grytdal V. Voldtekt i Oslo 2004: gjennomgang av sentrale data fra anmeldte voldtekter ved Oslo politidistrikt [Police-reported rape in Oslo 2004] (English abstract not available). Oslo: Oslo politidistrikt (Oslo Police District), 2005.

78. Stene RJ. Seksualforbrytelser: skjebner i rettsystemet [Sexual offences: legal outcome] (English abstract not available). Samfunnsspeilet. 2001;15:2-12.

79. Monroe LM, Kinney LM, Weist MD, Dafeamekpor DS, Dantzler J, Reynolds MW. The experience of sexual assault: findings from a statewide victim needs assessment. J Interpers Violence. 2005;20:767-76.

80. Feldhaus KM, Houry D, Kaminsky R. Lifetime sexual assault prevalence rates and reporting practices in an emergency department population. Ann Emerg Med. 2000;36:23-7.

81. Campbell R, Wasco SM, Ahrens CE, Sefl T, Barnes HE. Preventing the "second rape": rape survivors' experiences with community service providers. J Interpers Violence. 2001;16:1239-59.

82. Ruback RB, Menard KS, Outlaw MC, Shaffer JN. Normative advice to campus crime victims: effects of gender, age, and alcohol. Violence Vict. 1999;14:381-96.

83. Jeffner S. "Liksom våldtäkt, typ": om betydelsen av kön och heterosexualitet för ungdomars förståelse av våldtäkt [A kind of rape: youth's understanding of rape] (English abstract available). Uppsala: Ph.D. Thesis, Department of Sociology, Uppsala University, 1997.

84. Koss MP, Bachar KJ, Hopkins CQ, Carlson C. Expanding a community's justice response to sex crimes through advocacy, prosecutorial, and public health collaboration: introducing the RESTORE program. J Interpers Violence. 2004;19:1435-63.

85. Helström L. Stockholm South Hospital Emergency Clinic for Raped Women [Presentation held at the First International Conference on Survivors of Rape, Aarhus, Denmark 2008]. The Centre for Victims of Sexual Assault, Aarhus, Denmark, 2008 [cited 7-4-2009]. Available from: URL: http://www.voldtaegt.dk/files/Lotti_Helstrom_Stockholm_Emergency_Clinic_for_Raped_Women.pdf

86. Muram D, Hostetler BR, Jones CE, Speck PM. Adolescent victims of sexual assault. J Adolesc Health. 1995;17:372-5.

87. Poirier M. Care of the female adolescent rape victim. Pediatr Emerg Care. 2002;18:53-9.

88. Roberts JV. Criminal justice processing of sexual assault cases. Juristat. 1994;14:1-19.

89. Greenfeld LA. Sex offenses and offenders: an analysis of data on rape and sexual assault. (Report no.: NCJ-163392). U.S. Department of Justice, Bureau of Justice Statistics, 1997.

90. Schei B, Muus KM, Bendixen M. Forekomst av seksuelle overgrep blant studenter i Trondheim [Occurrence of sexual abuse among students in Trondheim] (English abstract available). Tidsskr Nor Laegeforen. 1994;114:2491-4.

91. Schou L, Dyb G, Graff-Iversen S. Voldsutsatt ungdom i Norge: resultater fra helseundersøkelser i seks fylker [Violence against youths in Norway] (English abstract available). Oslo: Folkehelseinstituttet [Norwegian Institute of Public Health], 2007.

92. Danielsson I, Blom H, Nilses C, Heimer G, Hogberg U. Gendered patterns of high violence exposure among Swedish youth. Acta Obstet Gynecol Scand. 2009;88:528-35.

93. Rickert VI, Wiemann CM. Date rape among adolescents and young adults. J Pediatr Adolesc Gynecol. 1998;11:167-75.

94. Petrak JA, Skinner CJ, Claydon EJ. The prevalence of sexual assault in a genitourinary medicine clinic: service implications. Genitourin Med. 1995;71:98-102.

95. Resnick HS, Holmes MM, Kilpatrick DG, Clum G, Acierno R, Best CL et al. Predictors of post-rape medical care in a national sample of women. Am J Prev Med. 2000;214-9.

96. Lewis SF, Resnick HS, Ruggiero KJ, Smith DW, Kilpatrick DG, Best CL et al. Assault, psychiatric diagnoses, and sociodemographic variables in relation to help-seeking behavior in a national sample of women. J Trauma Stress. 2005;18:97-105.

97. Fehman-Summers S, Norris J. Differences between rape victims who report and those who do not report to a public agency. J Appl Soc Psychol. 1984;14:562-73.

98. Starzynski LL, Ullman SE, Filipas HH, Townsend SM. Correlates of women's sexual assault disclosure to informal and formal support sources. Violence Vict. 2005;20:417-32.

99. Enhage-Johnsson K, Skwarek E, Seflin G, Eriksson C, Lindgren M, Boström L. Våldtäkt: tre delstudier om sjukvårdens bemötande, omhändertagande och behandling av kvinnor utsatta för våldtäkt: ett samarbetsprojekt mellan Kvinnokliniken, Akutkliniken och Kirurgkliniken, Södersjukhuset, Stockholm, 2003 [Rape: health care and treatment of rape victims in a hospital setting] (English abstract not available). Stockholm: [Sjukhuset], 2003.

100. Madsen KS, Sidenius K, Hilden M. Center for voldtægtsofre: årsrapport 2005 [Rape Trauma Service: annual report 2005. Copenhagen] (English abstract not available). Copenhagen: Rape Trauma Service, Rigshospitalet, 2006.

101. Knudsen M. Center for voldtægtsofre: årsrapport 2004-2005 [Rape Trauma Service: annual report 2004-2005] (English abstract not available). Århus, Denmark: Århus Universitetshospital, 2006.

102. Knudsen M, Parding S. Center for voldtægtsofre: årsrapport 2007 [Rape Trauma Service: annual report 2007] (English abstract not available). Århus, Denmark: Århus Universitetshospital, 2008.

103. McLean I. Clients from ethnic and local communities in Greater Manchester attending St. Mary's Sexual Assault Referral Centre. J Clin Forensic Med. 2003;10:221-9.

104. Thompson C. Audit of the management of victims of sexual assault in a city centre genitourinary medicine clinic. Int J STD AIDS. 2005;16:71-3.

105. Bang L. Who consults for rape?: sociodemographic characteristics of rape victims attending a medical rape trauma service at the Emergency Hospital in Oslo. Scand J Prim Health Care. 1993;11:8-14.

106. Magid DJ, Houry D, Koepsell TD, Ziller A, Soules MR, Jenny C. The epidemiology of female rape victims who seek immediate medical care: temporal trends in the incidence of sexual assault and acquaintance rape. J Interpers Violence. 2004;19:3-12.

107. Ingemann-Hansen O, Sabroe S, Brink O, Knudsen M, Charles AV. Characteristics of victims and assaults of sexual violence: improving inquiries and prevention. J Forensic Leg Med. 2009;16:182-8.

108. Lund MKØ, Skretting A, Lund KE. Rusmiddelbruk blant unge voksne, 21-30 år: resultater fra spørreskjemaundersøkelser 1998, 2002 og 2006 [Use of tobacco, alcohol and drugs among young adults, 21-30 years] (English abstract available). (SIRUS-

rapport 8/2007). Oslo: Statens institutt for rusmiddelforskning [The Norwegian Institute for Alcohol and Drug Research], 2007.

109. Skretting A, Bye EK. Bruk av rusmidler blant norske 15-16 åringer: resultater fra den norske delen av de europeiske skoleundersøkelsene ESPAD, 1995, 1999 og 2003 [Drug usage among Norwegian teenagers] (English abstract available). (SIRUS-rapport 5/2003). Oslo: Statens institutt for rusmiddelforskning [The Norwegian Institute for Alcohol and Drug Research], 2003.

110. McGregor MJ, Ericksen J, Ronald LA, Janssen PA, Van Vliet A, Schulzer M. Rising incidence of hospital-reported drug-facilitated sexual assault in a large urban community in Canada: retrospective population-based study. Can J Public Health. 2004;95:441-5.

111. Ullman SE, Filipas HH, Townsend SM, Starzynski LL. Trauma exposure, posttraumatic stress disorder and problem drinking in sexual assault survivors. J Stud Alcohol. 2005;66:610-9.

112. Abbey A, Zawacki T, Buck PO, Clinton AM, McAuslan P. Alcohol and sexual assault. Alcohol Res Health. 2001;25:43-51.

113. Hilden M, Schei B, Swahnberg K, Halmesmäki E, Langhoff-Roos J, Offerdal K et al. A history of sexual abuse and health: a Nordic multicentre study. BJOG. 2004;111:1121-7.

114. Burgess AW, Holmstrom LL. Rape trauma syndrome. Am J Psychiatry. 1974;131:981-6.

115. Acierno R, Resnick H, Kilpatrick DG, Saunders B, Best CL. Risk factors for rape, physical assault, and posttraumatic stress disorder in women: examination of differential multivariate relationships. J Anxiety Disord. 1999;13:541-63.

116. Kilpatrick DG, Ruggiero KJ, Acierno R, Saunders BE, Resnick HS, Best CL et al. Violence and risk of PTSD, major depression, substance abuse/dependence, and comorbidity: results from the National Survey of Adolescents. J Consult Clin Psychol. 2003;71:692-700.

117. Acierno RA, Kilpatrick DG, Resnick HS, Saunders BE, Best CL. Violent assault, posttraumatic stress disorder, and depression: risk factors for cigarette use among adult women. Behav Modif. 1996;20:363-84.

118. Dansky BS, Brewerton TD, Kilpatrick DG, O'Neil PM. The National Women's Study: relationship of victimization and posttraumatic stress disorder to bulimia nervosa. Int J Eat Disord. 1997;21:213-28.

119. Holmes MM, Resnick HS, Kilpatrick DG, Best CL. Rape-related pregnancy: estimates and descriptive characteristics from a national sample of women. Am J Obstet Gynecol. 1996;175:320-4.

120. Resnick H, Acierno R, Holmes M, Dammeyer M, Kilpatrick D. Emergency evaluation and intervention with female victims of rape and other violence. J Clin Psychol. 2000;56:1317-33.

121. Koss MP, Koss PG, Woodruff WJ. Deleterious effects of criminal victimization on women's health and medical utilization. Arch Intern Med. 1991;151:342-7.

122. Koss MP. Rape: scope, impact, interventions, and public policy responses. Am Psychol. 1993;48:1062-9.

123. Classen CC, Palesh OG, Aggarwal R. Sexual revictimization: a review of the empirical literature. Trauma Violence Abuse. 2005;6:103-29.

124. Temple JR, Weston R, Rodriguez BF, Marshall LL. Differing effects of partner and nonpartner sexual assault on women's mental health. Violence Against Women. 2007;13:285-97.

125. Walch AG, Broadhead WE. Prevalence of lifetime sexual victimization among female patients. J Fam Pract. 1992;35:511-6.

126. Mazza D, Dennerstein L, Ryan V. Physical, sexual and emotional violence against women: a general practice-based prevalence study. Med J Aust. 1996;164:14-7.

127. Eckert LO, Sugar N, Fine D. Characteristics of sexual assault in women with a major psychiatric diagnosis. Am J Obstet Gynecol. 2002;186:1284-8.

128. Kilpatrick DG, Acierno R, Resnick HS, Saunders BE, Best CL. A 2-year longitudinal analysis of the relationships between violent assault and substance use in women. J Consult Clin Psychol. 1997;65:834-47.

129. Resnick H, Acierno R, Kilpatrick DG, Holmes M. Description of an early intervention to prevent substance abuse and psychopathology in recent rape victims. Behav Modif. 2005;29:156-88.

130. Kushel MB, Evans JL, Perry S, Robertson MJ, Moss AR. No door to lock: victimization among homeless and marginally housed persons. Arch Intern Med. 2003;163:2492-9.

131. Goodman LA, Dutton MA, Harris M. Episodically homeless women with serious mental illness: prevalence of physical and sexual assault. Am J Orthopsychiatry. 1995;65:468-78.

132. Martin SL, Ray N, Sotres-Alvarez D, Kupper LL, Moracco KE, Dickens PA et al. Physical and sexual assault of women with disabilities. Violence Against Women. 2006;12:823-37.

133. McFarlane J, Hughes RB, Nosek MA, Groff JY, Swedlend N, Dolan MP. Abuse assessment screen-disability (AAS-D): measuring frequency, type, and perpetrator of abuse toward women with physical disabilities. J Womens Health Gend Based Med. 2001;10:861-6.

134. Teplin LA, McClelland GM, Abram KM, Weiner DA. Crime victimization in adults with severe mental illness: comparison with the National Crime Victimization Survey. Arch Gen Psychiatry. 2005;62:911-21.

135. Casteel C, Martin SL, Smith JB, Gurka KK, Kupper LL. National study of physical and sexual assault among women with disabilities. Inj Prev. 2008;14:87-90.

136. Isely PJ. Sexual assault of men: American research supports studies from the UK. Med Sci Law. 1998;38:74-80.

137. Keane FE, Young SM, Boyle HM, Curry KM. Prior sexual assault reported by male attenders at a department of genitourinary medicine. Int J STD AIDS. 1995;6:95-100.

138. King M, Woollett E. Sexually assaulted males: 115 men consulting a counseling service. Arch Sex Behav. 1997;26:579-88.

139. Duncan DF. Prevalence of sexual assault victimization among heterosexual and gay/lesbian university students. Psychol Rep. 1990;66:65-6.

140. Hickson FCI, Davies PM, Hunt AJ, Weatherburn P, Mcmanus TJ, Coxon APM. Gay men as victims of nonconsensual sex. Arch Sex Behav. 1994;23:281-94.

141. Bang L. Kroniske helseplager efter voldtægt [Chronic illness as a consequence of rape] (English abstract available). Tidsskr Nor Laegeforen. 1991;111:2525-9.

142. Holmes MM, Resnick HS, Frampton D. Follow-up of sexual assault victims. Am J Obstet Gynecol. 1998;179:336-42.

143. Stewart BD, Hughes C, Frank E, Anderson B, Kendall K, West D. The aftermath of rape: profiles of immediate and delayed treatment seekers. J Nerv Ment Dis. 1987;175:90-4.

144. Du Mont J, Miller KL, Myhr TL. The role of "real rape" and "real victim" stereotypes in the police reporting practices of sexually assaulted women. Violence Against Women. 2003;9:466-86.

145. Edward KE, MacLeod MD. The reality and myth of rape: implications for the criminal justice system. Expert Evid. 1999;7:37-58.

146. Kelly L, Lovett J, Regan L. A gap or a chasm?: attrition in reported rape cases. London: Home Office. Research, Development and Statistics Directorate, 2005.

147. Jordan J. Beyond belief?: police, rape and women's credibility. Criminal Justice. 2004;4:29-59.

148. Jordan J. Worlds apart?: women, rape and the police reporting process. Br J Criminol. 2001;41:679-706.

149. Vigrestad AI. Voldtektsofres møte med rettsapparatet [Rape victims meeting the judiciary system] (English abstract not available). Oslo: Master's Thesis, Department of Criminology and Sociology of Law, University of Oslo, 2004.

150. Du Mont J, White D, McGregor MJ. Investigating the medical forensic examination from the perspectives of sexually assaulted women. Soc Sci Med. 2009;68:774-80.

151. Herman JL. Justice from the victim's perspective. Violence Against Women. 2005;11:571-602.

152. Herman JL. The mental health of crime victims: impact of legal intervention. J Trauma Stress. 2003;16:159-66.

153. Campbell R. The psychological impact of rape victims. Am Psychol. 2008;63:702-17.

154. Madsen K. Hvor ku' du gøre det?: konfliktmægling ved seksuelle overgreb [How could you do it?: restorative justice in sexual assault] (English abstract not available). Copenhagen: Rape Trauma Service, Rigshospitalet, 2005.

155. Telsavaara TVT, Arrigo BA. DNA evidence in rape cases and The Debbie Smith Act: forensic practice and criminal justice implications. Int J Offender Ther Comp Criminol. 2006;50:487-505.

156. Jordan J. To believe or not to believe?: police responses to women rape complainants: Third Australasian women and police conference: women and policing globally, 23-10-2002. Canberra, Australia: Australian Institute of Criminology, 2003.

157. Feldberg G. Defining the facts of rape: the uses of medical evidence in sexual assault trials. Can J Women Law. 1997;9:89-94.

158. Istanbul Protocol. Manual on the Effective Investigation and Documentation of Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment. New York, Genova: United Nations, 2004.

159. Wilson JP, Moran TA. Forensic/clinical assessement of psychological trauma and PTSD in legal settings. In: Wilson JP, Keane TM, editors. Assessing psychological trauma and PTSD. New York: Guilford Press, 2004: 603-36.

160. Spohn C, Beichner D, Davis-Frenzel E. Prosecutorial justifications for sexual assault case rejection: guarding the "gateway to justice". Soc Probl. 2001;48:206-35.

161. Wessel E, Drevland GCB, Eilertsen DE, Magnussen S. Credibility of the emotional witness: a study of ratings by court judges. Law Hum Behav. 2006;30:221-30.

162. Ahrens C. Being silenced: the impact of negative social reactions on the disclosure of rape. Am J Community Psychol. 2006;38:263-74.

163. Frazier PA, Haney B. Sexual assault cases in the legal system: police, prosecutor, and victim perspectives. Law Hum Behav. 1996;20:607-28.

164. United Nations, Secretary-General. Ending violence against women: from words to action. New York: United Nations, 2006.

165. Rape Crisis Network Europe, 2009 [cited 4-4-2009]. Available from: URL: http://www.rcne.com/

166. Campbell R, Ahrens CE, Sefl T, Barnes HE. Social reactions to rape victims: healing and hurtful effects on psychological and physical health outcomes. Violence Vict. 2001;16:287-301.

167. Weisaeth L. Acute posttraumatic stress: nonacceptance of early intervention. J Clin Psychiatry. 2001;62:35-40.

168. Campbell R. What really happened?: a validation study of rape survivors' help-seeking experiences with the legal and medical systems. Violence Vict. 2005;20:55-68.

169. Ferris LE, Sandercock J. The sensitivity of forensic tests for rape. Med Law. 1998;17:333-50.

170. Martinussen ME, Balvig F, Laursen B, Madsen KS, Sidenius K. Voldtægt der anmeldes: del II: falsk anmeldelse af voldtægt [Police-reported rape II: false complaints] (English abstract not available). Copenhagen: Det Kriminalpræventive Råd [Danish Crime Prevention Council], 2009.

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APPENDIXES

Appendix A – paper I

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Appendix B – paper II

II

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Appendix C – paper III

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Appendix D – paper IV

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